REPORT

OF

THE EXPERT COMMITTEE

ON

THE REORGANISATION

OF

CENTRAL REVENUES LABORATORIES

AUGUST, 1979.

VOLUME - I

GOVERNMENT OF INDIA
INISTRY OF FINANCE (DEPARTMENT OF REVENUE)
NEW DELHI

PREFACE

1. At the conclusion of nearly fourteen months' labour I feel it is my duty to write a personal preface to the report. I must express my thanks to the Finance Minister and the Chairman of the Board of Customs and Excise for giving me this honour of serving the Customs and Excise Departments once again nearly 22 years after my retirement. I hope I have not belied their trust.

2. Though this is a largely technical report, since the tax-paying Importers and Exporters and manufacturers are also interested in the subject, and as we have seen many of them individually and met their Associations in all the places we visited, Government might consider the release of the Report minus the Chapter relating to Opium and Alkaloids for the public.

3. There were four distinguished outside scientists on the Committee. In spite of the heavy pressure of work in their own institutions, they gave their time cheerfully to the work of the Committee. Dr. A.F.Chhapgar of the National Physical Laboratory, Delhi was with the Committee on all its tours. Dr. P.Madhavan Nair of the National Chemical Laboratory, Poona, missed only a couple of tours due to his ill health. Dr. L.P.Pandey of the Metallurgical Laboratory, Jamshedpur also missed a few tours because he was out of India. Shri E.K.Ramachandran of the National Test House, Calcutta joined the Committee late, and even thereafter could not attend all our sittings due to pressure of work in his own institution. But whenever they were present with the Committee, they evinced keen interest in all our problems, and made very useful contributions.

4. I must particularly mention Dr. Madhavan Nair's contribution. We have seen it proper to incorporate a note recorded by him on Neemuch Alkaloid Works in the body of the report itself. Apart from that, in examining the requirements of the Departmental laboratories and in

understanding some of the actual problems and in stating them in lay lanugage, his contribution deserves commendation.

5. Dr. Chhapgar being located in Delhi was most easily available for consultations even when the Committee was not in session and his help is greatly appreciated. When examining Departmental Officers both administrative and scientific, his well informed interrogations brought out very useful information.

6. I would request the Government, to commend the work of all these four scientists, and particularly that of Dr. Madhavan Nair and Dr. Chhapgar to the Heads of their respective institutions.

7. The only Trade representative on the Committee Shri S.Sambasivan has been of great help to us in establishing better liaison with Associations every where and his contribution to our discussions has always been very well informed. We would like to record our appreciation of his services.

8. Dr. Ramanathan and Shri D.R.Gupta with their long experience of laboratory work, and particularly of opium and Alkaoids made our job of understanding these technicalities easier. Shri M.V.N.Rao and Shri Daya Sagar with their intimate knowledge of Customs and Excise procedures shared their knowledge with us at every stage of the Committee work. In addition by undertaking to edit the final draft they relieved me of a great burden. I am deeply grateful to all these colleagues for their couperation which made my association with the Committee, a very pleasant experience.

Sd/-
(SATTANATHAN)
CHAIRMAN,

New Delhi
Date 10.8.79.

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सत्यमेव जयते

INTRODUCTION

1. The Expert Committee on the Central Revenues Laboratories was constituted by the Government of India vide their Resolution F.No. A-11019/18/78-Ad.IV dated the 31st May, 1978. The terms of Reference of the Committee and its personnel are reproduced below:-

I. Terms of Reference:

(a) The adequacy or otherwise of the number of Laboratories under the Central Board of Excise & Customs.

(b) Adequacy or otherwise of modern testing facilities and improvements in the appratus, equipment, fittings and literature needed in the context of technological innovations and the wide range of products that the departmental laboratories are called upon to test.

(c) The procedure for and frequency of sampling.

(d) Measures aimed at reducing delays in testing or advising the department on specific issues referred to the laboratories.

(e) Utility or otherwise of tests carried out by outside laboratories.

(f) Feasibility of identifying areas where with suitable training, the departmental field staff can themselves conduct tests which might not require elaborate equipment or expertise as to warrant a reference to the laboratories.

(g) Organisational and administrative set-up of the laboratories with particular reference to:-

  i) requirements of staff at each laboratory including leave reserve.

  ii) different grades with channels of promotion.

  iii) minimum qualifications.

  iv) pay and emoluments.

  v) buildings.

  vi) in-service training; and

(h) Any other matter germane to the enquiry.

II. The composition of the Committee:

Chairman. ... Shri A.N.Sattanathan,
Indian Customs Service (Retired)-

Members. ... 1. Shri S.Venkataraman/Shri M.V.N.Rao,
w.e.f. 31.7.78.
Director of Inspection
(Customs & Central Excise).

2. Shri Daya Sagar,
Director of O & M Services
(Customs & Central Excise).

3. Dr. V.S.Ramanathan,
Retired Chief Chemist, Central Revenues.

4. Shri D.R.Gupta,
Chief Chemist, Central Revenues.

5. Shri A.K.Bhattacharya/Shri E.K.Ramachandran,
w.e.f. 14.9.78
Joint Director,
National Test House,
Alipore, Calcutta.

6. Dr. Madhavan Nair,
Scientist,
National Chemical Laboratory,
Pune.

7. Dr. A.F.Chhapgar,
Scientist,
National Physical Laboratory,
New Delhi.

8. Dr. L.P.Pandey,
Scientist,
National Metallurgical Laboratory,
Jamshedpur.

9. Shri J.B.Shah,
Chairman,
Custom House Clearing
Agents Association,
Bombay.
/Shri S.Sambasivan,
w.e.f. 31.7.78
President of Federation
of Custom House Agents
Association, Madras.

Secretary. ... Shri V.R.Ranganathan, Chemical Examiner,
Grade I, Central Revenues Control Laboratory,
New Delhi.

2. The inaugural meeting of the Committee was held in the North Block, Secretariat Conference Room on 29.6.78, and it can be said the Committee began to function from that date. During this meeting, the Chairman of the Committee broadly outlined the form in which the questionnaire should be framed to elicit information on all the subjects covered by the terms of reference. The questionnaire was finalised under his guidance and printed copies were circulated to Collectorates, Laboratories and to important Trade Associations during the month of July, 1978.

3. The supporting staff of the Committee was sanctioned vide Government of India orders F.No. A.11019/18/78-Ad.IV, dated 19th September, 1978 and 22nd September, 1978 i.e. nearly two months after the Committee began to function. The Chairman of the Committee particularly requested that the Committee should be given a good Ministerial Deputy Superintendent, a Statistical Officer and at least two good Stenographers. The Staff sanctioned joined on the following dates:-

Deputy Office Superintendent, Gr.II.	- 14.10.78
Upper Division Clerk.	- 17.11.78
Upper Division Clerk.	- 21.11.78
Lower Division Clerk.	- 14.10.78
Stenographer Ordinary Grade	- 16.10.78
Stenographer Ordinary Grade.	- 16.11.78

The complements of the staff joined the office nearly 4 to 5 months after the Committee began its work.

4. The Committee, particularly its Chairman, on whom falls the final responsibility of reporting felt that the quality of the staff, pointedly its stenographers fell far short of the standard required for Committee work. His misgivings were brought to the notice of the Chairman of the Central Board of Excise & Customs more than once. However, inspite of the shortcomings in this direction, the Committee's office was in a position to work only from 14.10.1978 with the joining of the Deputy Office Superintendent.

5. Even during the inaugural meeting, the Committee decided on its programme of visits without waiting for the full complement of staff to be in position. As the Chairman and members were not appointed full time, and as many of them are working officers and scientists, it was not possible for many members to spare more than 4 or 5 days in a month. Even here at no time did all the members attend. There was always one or more absentees. Dr. Bhattacharya of the Alipore Test House did not attend any meeting and Shri E.K.Ramachandran who was appointed in his place attended a Committee sitting for the first time on 25.9.1978. Dr. Pandey of the Jamshedpur Metallurgical Laboratory joined the Committee for the first time on 25.7.78 and could not attend some later meetings as he was out of India. Shri J.B.Shah, Chairman, Custom House Clearing Agents' Association attended the Committee meeting at Bombay during July, 1978. He was replaced by Shri S.Sambasivan on 31.7.78 who has since been with the Committee throughout. Shri S.Venkataraman, Director of Inspection, was appointed a member initially and he attended the inaugural meeting. He was replaced on 31.7.78 by Shri M.V.N.Rao, who has been with the Committee till the end.

6. Though a Committee with similar terms of reference was appointed in 1957 and submitted its report, developments during the last two decades have been so vast, this Committee had to make a study in depth of all problems relating to sampling, testing and the role of the laboratories in classification problems on the Customs import and export side, and on Central Excise side. Besides the Committee made an intensive study of problems relating to Opium and Narcotics. The reports of two Committees, one on Opium Losses and another on Narcotics were of great assistance in understanding the background of the subject. The Committee took into account the observations made by earlier study groups and Committees, on the subject of Laboratory tests. We would mention in

particular the reports of following Committees:-

1. Report of the Expert Committee for reorganisation of Customs Laboratories, 1957.
2. Report of the Indirect Taxation Committee, 1977-78.
3. Customs Study Team Report, 1967.
4. S.R.P. Committee Report.
5. Report of the V.R.Mehta Committee on congestion in Ports particularly in Bombay.
6. Report of the Committee on Kandla Free Trade Zone, Gandhidham, 1978.
7. Report of the Govt. Chemist, 1977, U.K.
8. Pay Commission Reports.
9. Estimates Committee Lok Sabha report.

7. We were faced with a spate of representations from the Chemical Service Association and its local branches in all Laboratories. In addition to the elaborate written representations, we listened to the verbal representations of their representatives in all laboratories every time we visited a laboratory. Similarly there were representations from the Laboratory Attenders wherever we went. We cannot but record that these representations revealed the depth of their discontent which must have been simmering for a long time.

8. On the technical aspects of our work we had to depend on the replies to our questionnaires (Annexure I-E) from the Collectorates. Though a good deal of the information had to be furnished by the laboratories, some aspects of our questionnaires can only be answered by the executive branches of the Collectorates. It was suggested that the Heads of the Laboratories should supply the information required of them to the respective Collectors for formulating the official response to the questionnaire. As our visits followed soon after the questionnaires were in the hands of the Collectors, some Collectors were not ready with all the answers; but most of them got ready for us all information that we needed from time to time.

In some cases supplementary questionaires had to be issued; in other instances where we found that our questionaires were not properly understood fresh explanatory letters had to be issued. On the whole with two exceptions, all Collectorates of Customs and Central Excise were exceedingly helpful, and evinced their keen involvement in the work of the Committee. The lapses of the two Collectorates were brought to the notice of the Chairman of the Central Board of Excise & Customs vide Expert Committee Chairman's letter EC/1/78, dated 25.11.78 and was acknowledged by Shri Sawhney's letter D.O. Dy.No. 8380 M(Cus)/78, dated 18.12.78.

9. We would like to express our special appreciations of the help rendered to us by the Collector of Customs, Bombay, who probably was approached by the Committee more often than others, for special information and statistics on some important aspects of our investigation. The Heads of the Laboratories, of the Custom House Bombay and Central Excise, Baroda and Madras deserve special mention for their useful contributions. Many of the other Collectors of Central Excise and Customs extended their cooperation unstintingly and made our job easier.

10. We met Trade Associations and Chambers of Commerce in the Ports and in many other industrial Centres besides Association of Clearing Agents. While they were critical of delays and errors in Customs and Excise methods, many constructive suggestions were forthcoming. When the Department or Government point of view was explained to them, they were quick to appreciate them. We have utilized many of the ideas given to us by some of these Associations. A list of all the Trade Associations whom we met along with other details is given in annexure I-D.

11. We have dealt with Opium and Alkaloids at some length, for the grievances of officers were more pronounced in this branch. All the Chemists and other executive officers in Ghazipur and Neemuch were extremely helpful and patient in answering our inquisitive questions.

There is one important subject, namely, the effectiveness of scientific-cum-accounting control in Ghazipur which we wanted to study. The only person who should be able to explain this to us, is the Chief Controller of Factories and the Narcotics Commissioner. All our questions and our specific memoranda on the subject must have been seen by him, and were, in fact seen by him. We were unable to secure his presence before the Committee inspite of repeated requests, and the Chairman wanted to give this officer a chance to know our doubts, and to answer on behalf of the Factory he controls, and so he invited him telegraphically to meet him at Bombay on 21st May, 1979 which he did eventually. Agreeing generally with our point of view, he promised to give a written reply by 15th June, 1979, after consulting his officers. We regret to record that he has not so far sent us any communication. Even ignoring this lapse, we are sorry that the problem we raised remains still unresolved.

12. The Committee might have finished its task earlier if we had better supporting staff and if were able to meet for longer periods more frequently. However, we are happy to submit a unanimous report and we trust our recommendations will be of some benefit to the Technical Service officers, the Customs and Excise Departments, and to the Government of India in general. The report is in two volumes i.e. Volume-I is the "report" and Volume-II contains "Annexures".

13. We would also like to place on record our appreciation of the services of Shri V.R.Ranganthan, our Secretary. His mastery of technical information relating to all laboratory matters, his knowledge of the special complexities of the various tariff Schedules and Notifications were very helpful to us in understanding the problems, many of which were new to many of us. The Committee wishes to make mention of the useful part played by Sarvashri S.S. Malhotra D.O.S.L-II and A.T.Daryani, Chemical Assistant Grade-I. The other members of our staff did their best to make our job easier and we wish them well.

We thank the Government of India for giving us this opportunity of serving them in this important field of activity.

Chairman	...	Shri A.N.Sattanathan.	Sd/-	
Members	...	Shri M.V.N.Rao.	Sd/-	
		Shri Daya Sagar.	Sd/-	
		Dr. V.S.Ramanathan.	Sd/-	10/8/79
		Shri D.R.Gupta.	Sd/-	
		Shri E.K.Ramachandran.	Sd/-	10.8.79
		Dr. Madhavan Nair.	Sd/-	
		Dr. A.F.Chhapgar.	Sd/-	
		Dr. L.P.Pandey.	Sd/-	
		Shri S.Sambasivan.	Sd/-	10/8/79.
Secretary	...	Shri V.R.Ranganathan.	Sd/-	10.8.79

CHAPTER - 1

SUMMARY

We give in this chapter not a complete summary of recommendations as such. In a report which is partly technical it is difficult to summarise recommendations. there are several descriptive portions which have to be read in full and a summary may be inadequate. However, we are enumerating here serially most of our precise recommendations, and where this cannot be done indications are given as to the trend in the chapter. It is only fair for the report to be read in its full text; this summary can at best serve as a guide.

ROLE OF LABORATORIES

1. Laboratories' technical opinion is called for regarding classification of several items viz. Grey-plasticine, Ethylbenzene, polyblend, Balsamotolu, Magnesium oxide, Incol (MORL), Acrylic bulked yarn, Bata compound etc. etc. Furnishing technical opinion adds to the work load of the Chemical Service Officers at all stages.

(Para 3.5)

SAMPLING

2. Certain guidelines are suggested for drawal of samples.

(Para 4.4)

3. The Drawing Officers and Testing Officers should be familiar with the Indian Standards Procedures on drawal of samples of several commodities published by them.

(Para 4.6)

4. Sampling of Drugs and fine Chemicals should be done with clean instruments.

(Para 4.7.1)

5. The nature of containers in which the goods are packed should be indicated in the register at the time of drawal itself.

(Para 4.7.2)

6. The Bombay Custom House instructions on drawal of samples may be adopted by other ports also, so as to ensure uniformity.

(Para 4.8)

7. There should be a periodical exercise for reviewing the orders on drawal of samples.

(Para 4.9)

8. The frequency would necessarily vary with the types of goods and standing of the particular manufacturer. A continuous study has to be undertaken for this purpose by a Standing Committee consisting of the Director of Inspection, the Director of Drawback, the Chief Chemist's representative and the representative from an organisation like Indian Standards Institution.

(Para 4.10)

9. The 1977 Board's instructions on drawal of samples on the Central Excise side required to be reviewed. The discretion vested with the Assistant Collector for drawal of samples should not be exercised by the Inspectors.

(Para 4.10)

10. A case exists for acceptance by the Department of manufacturer's declaration of Indian Standards Institution certified goods, Medicines of reputed firms and 'Agmark' label products.

(Para 4.10)

11. The attention of all the Collectors should be drawn to the recommendations of the Committee headed by Shri V.R. Mehta of the Ministry of Shipping and Transport on the congestion in ports and accumulation of samples in laboratories.

(Para 4.11)

12. Steps should be taken to deliver the samples lying in sheds or in the collection points in the docks to the laboratory atleast twice a day.

(Para 4.12)

13. Samples (Import), containing volatile organic solvents such as Paints and Varnishes, Resin solution and Milk Powder and products thereof, Fish oil, Tallow, V.N.E. Oils, Alcoholic Beverages, and preparations, Petroleum products, Surface Active Agents, Starch and Starch products should be despatched to the laboratory with greater expedition and care, and should be tested on priority basis.

(Para 4.12)

14. The test validity period for the branded goods or proprietary products of reputed manufacturers may be extended thereby reducing frequency.

(Para 4.12)

15. On the Central Excise side, the samples drawn from Patent & Proprietary Medicines, Food products, Aerated waters, V.N.E. Oil and perishable goods should be despatched to the laboratory with greater expedition and should be tested on priority basis.

(Para 4.12)

16. The major Custom Houses should pool their experience and adopt a uniform procedure for reducing the frequency of sampling in the light of Committee's observations.

(Para 4.13)

17. When a consignment arrives just before or after the time of expiry of the validity of the earlier test report, the clearing agents may be permitted to ask for a test well-ahead of the expiry date of the previous test so that the fresh period of validity commences without delay.

(Para 4.14)

18. If the precautions for packing, sealing and registering recommended by us are strictly followed there should not be any objection to the importers/ exporters/clearing agents representatives carrying a sealed sample to the laboratory. However, this practice should not be encouraged if there are sufficient departmental staff to do this work.

(Para 4.15)

19. The samples drawn should be properly recorded in the laboratory registers and delivered in the shortest possible time to the proper desk in the laboratory.

(Para 4.16)

20. The appraising officer should ensure importers/ clearing agents/manufacturers supply the printed literature of the products giving information helpful for testing at the time of filing the papers so that this could be forwarded alongwith the samples to the laboratory.

(Para 4.17)

21. In disputed cases only, the details of the first test or/and of the retest can be given to the aggrieved party in the interest of natural justice. This cannot be supplied as a matter of routine.

(Para 4.17)

22. The various facilities for testing should be

made known to all the Trade associations with necessary precaution to ensure that such facilities are not taken undue advantage of.

(Para 4.18)

23. On the Central Excise side, ordinarily the retest should be allowed only on remnant samples, as is done on Custom side subject to the observation in S.No.25 below, regarding quality and content. After the remnant sample is retested and reported on by the Chief Chemist, the field officer should desist asking retest on duplicate or triplicate sample on the plea of natural justice.

(Para 4.19.1)

24. In respect of retest in the original laboratory (a) retest should be done on the remnant samples and (b) retest should be done by different analysts and test results should be checked by the Head of the laboratory.

(Para 4.19.2)

25. The first sample should be drawn in adequate quantity. The remnant should be preserved with greater care and precaution to ensure its complete identity in quality and content. If the goods are not cleared, then the Assistant Collector in his discretion may permit drawal of fresh samples in appropriate circumstances.

(Para 4.19.3)

26. In the event of Collectorate laboratories having doubts about the method of analysis, adequacy of local equipment used, etc. it should be open to them to send the samples for retest to the Control Laboratory.

(Para 4.19.4)

27. On the Central Excise side the contents of the test report alone may be communicated to the party, if sufficient reasons are given for the request.

(Para 4.19.5)

28. If the trade desires more frequent sampling, it could be allowed on textile samples particularly yarn samples; the Collector and the Head of the laboratory could arrive at an acceptable norm of frequency.

(Para 4.24)

29. The test reports must be devoid of ambiguity and some procedure may be evolved to communicate the testing procedure to the Trade associations.

(Para 4.25)

30. The Board might examine in consultation with the Textile Commissioner, the "TEX" system for determining the fineness of the yarn and suitably modify the Textile Tariff.

(Para 4.26)

31. A small study group should go into the matters connected with the textile tariff in detail so as to reduce the complexity of the tariff.

(Para 4.29)

32. The laboratory officers should be associated with the drawal of samples from bulk goods such as Ores, Oils, including Petroleum Products, Tallow, Paper, Textiles, Steel, Synthetic Rubber, Rubber Chemicals, Organic Surface Active Agents, bulk chemicals, Plastics, resins etc.

(Para 4.30)

33. The Committee does not favour acceptance of private laboratories' reports by the Customs and

Central Excise Authorities. The practice, once conceded, could lead to abuses.

(Para 5.6)

34. The additional expenditure on equipment proposed is not excessive compared with the advantages derived by having the Revenue Laboratories self-sufficient.

(Para 5.7)

35. In extra-ordinary circumstances the Committee recommends that samples can be sent to the nearest National or Government Laboratories for test, in case necessary facilities are not available in the Revenue Laboratories.

(Para 5.8)

36. In extreme cases of congestion, if the reports are required urgently, samples could be tested in reputed private laboratories by the Departmental Chemist

(Para 5.8)

MINI-KIT-TEST

37. The concensus of opinion is against the departmental field staff themselves carrying out simple tests even on a trial basis. The potentialities for misuse and errors might be immense.

(Para 6.7)

TARIFF RATIONALISATION

38. The Committee recommends that action may be taken to prescribe alcoholometry units in metric system in both the tariffs.

(Para 7.5)

39. The mineral oil items in the Customs Tariff should be amended as per the existing Petroleum Act

thereby giving the flashing point in full degree avoiding decimals.

(Para 7.6)

40. The use of the word 'Bituminous sustance' in the mineral oil items in the Tariffs causes difficulties in testing.

(Para 7.6.1)

41. The Resins and plastic items in the Central Excise Tariff should be worded exactly the same as in the Customs Tariff so as to avoid difficulties in interpretation.

(Para 7.7)

42. Non-precise terms like "flats" used in Iron and Steel items should not figure in the Central Excise Tariff.

(Para 7.14)

43. The other anomalies pointed out in the Customs and Central Excise Tariffs in this chapter should be examined, so that similarity may be brought about in the wordings of similar or common items in both the tariffs.

(Para 7.16)

DRAWBACK

44. Where either Drawback rate is uniform for the sub-grade, sub-Sr.No. and is not related to any material composition, normally samples are not required for test, for example, Aggarbatti, Corrugated Board Boxes, flat files, paper cones etc.

(Para 8.5)

45. Where either the Drawback rate itself is based on material composition or where though the rate is on Free on Board value, and there are different slabs of

rates depending upon the material composition, normally a sample is to be drawn for test from each consignment and mere declaration of the composition is not acceptable.

(Para 8.5)

46. Tests are being carried out on samples of Textile, not drawn by Customs Officers, in the Textile Committee laboratory. The desirability of dis-continuing this practice must be examined.

(Para 8.7)

47. The procedure for calculation of quantum of drawback should be simplified and constantly revised.

(Para 8.13.1)

48. When the difference in the quantum of drawback depending on the main components or use is not very significant from the revenue point of view, a flat rate could be adopted.

(Para 8.13.2)

49. When the export consignment is small, as in the case of fancy goods, presentation articles etc., test can be avoided if flat rates are fixed with reference to the percentage of contents.

(Para 8.13.3)

50. The drawal of complicated samples should be handled by a chemist. (Cables etc.)

(Para 8.13.4)

51. Avoidance of referring samples to Alipore Test House or outside laboratories has to be ensured by additional equipment and staff in the departmental laboratories.

(Para 8.13.5)

52. As the bulk of drawback shipments takes place

from Bombay, if it is decided that all tests particularly with reference to textile should be done in the departmental laboratory, adequate staff should be sanctioned as a temporary measure and the position reviewed every year.

(Para 8.13.6)

DEPARTMENTAL LABORATORIES IN REFINERIES.

53. The department should follow uniform policy in the matter of testing of imported crude oil for all the refineries.

(Para 9.4)

54. As mineral oil products are of great revenue importance, it is desirable to have the departmental chemists associated with the drawal of samples.

(Para 9.10)

55. The drawal of samples in the Refineries should be by surprise and the frequency of drawal of samples in the beginning should be once in a fortnight from final clearance tanks according to the standard procedure.

(Para 9.11.1)

56. Surprise samples should be drawn from petroleum products at the distribution end also, and it is better that a departmental chemist is associated with sampling and gauging work, to the extent possible.

(Para 9.14)

57. The Committee favours the continuance of the dip system of gauging instead of flow metre.

(Para 9.15)

58. The transit loss during movement of petroleum products should be studied for a couple of years and correct quantum of tolerance prescribed.

(Para 9.15)

59. The departmental laboratories attached to the Refineries should not depend on the Refineries for the apparatus but instead have their own equipment.

(Para 9.17)

60. Clear scientific specifications should be mentioned for speciality products if any tests are to be purposeful. Names presumed to indicate end use may be misleading.

(Para 9.18)

61. It would not be advisable to fix standard density as suggested by the Study Group set up by the Collector of Customs and Central Excise, Cochin for various petroleum distillates.

(Para 9.19)

62. The instruments used for ascertaining density should be checked by competent authority and both the Refinery and the departmental laboratory should use similar instruments.

(Para 9.20)

63. The Committee recommends that the temperature for mineral oil accounting be kept at the temperature as advised by Indian Standards Institution instead of the present 15°C.

(Para 9.20)

64. Departmental chemists by closer association with Refinery Control Laboratory Chemists should be encouraged to develop expertise in the field of Petroleum Chemistry.

(Para 9.26)

65. The Committee recommends additional departmental Refinery Laboratories for the following Refineries :-

1. Haldia Refinery;

2. Indian Oil Corporation Refinery Noonmati and Bongaigaon;
3. Mathura Refinery (when goes into stream).

(Para 19.27)

66. The staff complement recommended for these laboratories will be one scientific officer, one laboratory assistant, one stenographer and one sepoy. When the laboratory deals with more than one Refinery, a post of analyst be given instead of a laboratory assistant.

(Para 9.27).

CENTRAL REVENUES CONTROL LABORATORY, NEW DELHI.

67. It would be improper to shift opium assay work from Central Revenues Control Laboratory to the factories of Ghazipur and Neemuch. Analysis is bound to lose its impartial and natural position in that event.

(Para 10.28)

68. At Ghazipur and Neemuch the rooms where opium estimations are done should be air-conditioned for controlling the temperature at 20°C for obtaining better results.

(Para 10.28)

69. The Gas liquid chromotograph method adopted by United Nations Narcotics Laboratory, Geneva can be tried out as a replacement to the conventional British Pharmacopoeia method which is more time consuming.

(Para 10.29)

70. The Committee recommends that the opium section of the Central Revenues Control Laboratory should have more working chemists.

(Para 10.33)

71. For disposal of the accumulated arrears of opium samples (about 400), adhoc provisions should be made for more chemists at the junior level.

(Para 10.34)

72. The Central Excise Wing of the Central Revenues Control Laboratory, New Delhi should be separated from the Control Laboratory and shifted to another location under Collector of Central Excise, Delhi to serve as Regional Laboratory for the North India Collectorates.

(Para 11.1)

73. The Director should pay more visits to the field laboratories and keep liaison with Collectors.

(Para 11.2)

74. The Control Laboratory should have a Director, two Joint Directors i.e. Joint Director - Technical and Joint Director - Narcotics and general administration. Their duties are outlined.

(Para 11.2)

75. The Headquarters Laboratory should undertake (a) Research and Development activities particularly relevant to analytical work, and (b) simplification and standardisation of analytical procedures and keeping and instrumentation and equipment modern.

(Para 11.2)

76. In order to make the Headquarters laboratory more purposeful and effective, following should be attended to more effectively :

- i) Inspection of subordinate laboratories and carrying out Research and Development work.
- ii) Modernising testing facilities; and
- iii) Preparation of a Test Manual.

(Para 11.2 & 5)

77. In view of the larger concentration of testing work at Bombay, the Committee recommends appointment of a Joint Director for the Bombay Custom House Laboratory who in addition will inspect all the laboratories in the Western Zone and Southern Zone.

(Para 11.3)

78. The Inspection of the technical work of the scientific staff posted to the opium and alkaloid factories will be the special responsibility of the Director.

(Para 11.4)

REORGANISED SET UP

79. The Ministerial staff of the Central Revenues Control Laboratory can be attached to Delhi Collector of Central Excise Office in order to provide sufficient scope for promotion.

1.7)

80. The Committee after examining the statistics of the samples from various Collectorates, feels that it would be wasteful and premature to provide every Central Excise Collectorate with a laboratory.

(Para 12.2)

81. The following existing laboratories should be recognised as regional laboratories :

1. Central Excise and Customs Wing of the Control Laboratory, Delhi completely separated from the Control Laboratory.
2. Custom House Laboratory, Bombay.
3. Central Excise Laboratory, Bombay.
4. Customs and Central Excise Laboratory, Calcutta.
5. Customs and Central Excise Laboratory, Madras.

(Para 12.3)

82. The Committee recommends four new Laboratories to be set up soon (1) a Central Excise laboratory at Kanpur to cater to the Collectorates of Kanpur and Allahabad, (2) a Laboratory for the Central Excise at Hyderabad, (3) at Paradeep Port to handle the Customs samples as well as the samples of Bhubaneswar Collectorate, and (4) at Gauhati.

(Para 12.4)

83. This Laboratory at Gauhati will test the samples of the Indian Oil Corporation Refineries at Noonmati and Bongaigaon, besides excise samples of the Shillong Collectorate.

(Para 12.4.4)

84. The Committee recommends at a second stage laboratories at Bangalore, Ahmedabad, Indore, Amritsar, Poona and at the Bombay Air Port, say two or three years after setting up laboratories at Kanpur, Hyderabad and Paradeep.

(Para 12.5)

85. The two major laboratories at Bombay, namely Customs and Excise Laboratories will continue to function separately.

(Para 12.11)

86. The head of the major laboratory should be treated at par with Deputy Collector or Additional Collector in independent charge and be given a limited separate budget for specific purposes. In essence the Head of the laboratory may be declared as head of office with all the powers that go with it.

(Para 12.16)

87. The Joint Directors at Delhi and Bombay will write the confidential character rolls of all the senior scientific officers working in their zones.

(Para 12.17)

88. The Director of Central Revenues Laboratories should be given sufficient Funds to distribute to the regional laboratories for purchase of sophisticated equipment.

(Para 12.18)

89. The Committee recommends a new yardstick for chemist in the Customs and Excise Laboratories as 552 samples per year per chemist.

(Para 13.6)

90. Testing work in the laboratories should be organised on the Divisional basis and each Division should specialise in a major commodity.

(Para 13.7)

91. A system of referesher courses and visits to major outside laboratories should be devised and steps should be designed to encourage specialisation. Government should remove the impediments in the way of Scientific Officers publishing scientific papers. The Divisional Heads of the Laboratories should be encouraged to attend symposia and seminars to read scientific papers.

(Para 13.7)

APPARATUS AND EQUIPMENT

92. The list of instruments given in Board's letter issued in January,'76 may be purchased if not already done; except X-ray diffraction apparatus, the purchase of which can be deferred for the time being.

(Para 14.2)

93. Similarly the need to purchase Nuclear Magnetic Resonance by Neemuch factory be re-examined in the light of the Committee's observations.

(Para 14.2)

94. The regional laboratories should be fully equipped with all necessary costly instruments, and the smaller laboratories in their zone can avail of these facilities.

(Para 14.4)

95. The Refinery Laboratories should be adequately equipped for testing mineral products figuring in the Tariff.

(Para 14.4)

96. It is necessary to recruit two instruments engineers at Junior Class-I level at Bombay and Delhi.

(Para 14.6)

97. All laboratories should have qualified librarians.

(Para 14.7)

98. The purchase of sophisticated apparatus by the Revenue laboratories should be coordinated by the Joint Director.

(Para 14.8)

99. The Joint Director at Delhi will take complete stock of all the special apparatus in all the laboratories and will redistribute surplus or not constantly used apparatus to newly started Revenue Laboratories or Departmental Refinery Laboratories.

(Para 14.8)

BUILDINGS ETC.

100. The Committee has recommended several improvements to the infra-structural and other facilities in laboratories (i) two easily accessable exits, (ii) immovable fittings should be so fixed to provide adequate moving space, (iii) no fittings on the floor, (iv) the re-agent shelf should be easily accessable.

(Para 15.1)

101. Adequate ventilation and efficient exhausts to be provided in the laboratory.

(Para 15.2)

102. Should have ordinarily separate rooms for different purposes.

(Para 15.3)

103. The laboratory should be provided with efficient fume cup-board and relevant Indian Standards Institution specifications should be the guidelines.

(Para 15.4)

104. There should be arrangement for cutting of the service connection from one point of the laboratory.

(Para 15.5)

105. Sinks and drainage should be chemically resistant material.

(Para 15.6)

106. There should be a well-lighted and ventilated room for stores and library.

(Paras 15.9 & 15.10)

107. The space for the staff working in the laboratories should be determined by recognised norm.

(Para 15.11)

108. There should be a separate room for receipt and despatch of samples.

(Para 15.11)

109. In the Bombay Central Excise Laboratory the flooring should be improved and sufficient exhaust fans should be placed so as to make the place dust free. As a long term measure the Government can think of constructing new accommodation to locate the Central Excise Laboratory, Bombay which is now in a rented building in a suburb.

(Para 15.15)

110. In the Refineries, the Departmental laboratory should be located preferably close to the Refinery's own control laboratory.

(Para 15.16)

111. The Control Laboratory at Delhi should have separate accommodation for library, conference hall, common room for scientists, club room and better toilet facilities.

(Para 15.19)

112. The Director, Joint Directors, Deputy Directors should have office accommodation facilities comparable to the officers of similar rank in the Custom House or Central Excise offices.

(Para 15.20)

113. As far as possible Government should have their own laboratory building and also make sufficient provisions for the expansion of laboratory for a period of not less than ten years.

(Para 15.21)

114. The Committee does not favour a college type laboratory but instead recommends separate sections and rooms for different types of work.

(Para 15.21)

115. In bigger laboratories similar facilities should be provided as suggested for Central Revenues Control Laboratory.

(Para 15.22)

116. (i) Provision should be made for a guest-house at the Headquarters laboratory.

(Para 15.23)

(ii) Control laboratories and the Regional Laboratories should be given intercom facilities.

(Para 15.24)

(iii) Residential phone to be provided to senior officers of the laboratory.

(Para 15.24)

OPIUM AND ALKALOID FACTORIES

117. Mechanical or electrical contrivance of mixer-cum-dryer should be extended to all the trays for drying process so as to avoid manual handling and to expedite drying. The mixer-cum-steam dryer as in use in Neemuch can be adopted in Ghazipur also.

(Paras 16.6.4 & 16.20)

118. Experienced pharmaceutical technologists should examine all the processes in the Ghazipur factory with a view to minimise manual handling and to devise contrivances which can be operated upon mechanically or electrically. The possibility of extending mobile stirring contrivance to all the trays be taken up seriously.

(Para 16.13)

119. The Industrial Toxicology Research Centre, Lucknow may be requested to examine the toxicology problem in the Opium and Alkaloid factory, Ghazipur and to suggest ways and means of avoiding contamination or health hazards.

(Para 16.13)

120. A project for mechanisation of Alkaloid Works in Ghazipur should be entrusted to a competent body in consultation with Indian Drugs Pharmaceutical Limited in the light of experience gained at Neemuch.

(Para 16.14)

121. The Research and Development Laboratory in Ghazipur should be modernised as soon as possible, in view of the Ghazipur's historic association with opium.

(Para 16.17)

122. The observations of the Shib Naub Singh's Committee on improving storage and mixing facilities and structural improvements should be given effect to.
(Para 16.18)

123. The procedure for drawal of samples at Ghazipur and Neemuch should be similar.
(Para 16.18)

124. The design of the trays used in the Abkari Section can be improved greatly by lining them with thin Aluminium metal.
(Para 16.20)

125. Norms for determining permissible loss in storage should be worked out by weighments and tests at strictly controlled conditions.
(Para 16.27)

126. The Committee is not satisfied with the effectiveness of Accounts Control on the various stages of transfers of raw opium for import sheds to Malkhana, Drying Trays, (Abkari) and finally to Export (Excise) stage as a counter-check on chemical control. The relation between consistency and morphine content is not scientifically established for effective accounts control. The necessity for numerous weighments, sampling and tests and the effectiveness of production control may be examined by a body like the Central Drug Research Institute, Lucknow.
(Para 16.35)

127. The additional storage facilities for opium should be provided immediately to avoid backlog.
(Para 16.37)

128. The process control exercised must be properly related to the type of machinery in the use and technical advice should be sought on this.
(Para 16.39)

129. Officers from Central Revenues Chemical Service should normally be selected if new posts are created at Neemuch or Ghazipur. If specialists are needed, posts at appropriate levels in the service should be created instead of creating ex-cadre posts and appointing outsiders on special scales of pay. Outsiders appointed in ex-cadre posts should not claim posts in the regular Central Revenues Scientific/Technical Service.

(Para 16.45)

130. The Science and Technology Ministry and the Scientists working in the Drugs Research Centre, Lucknow, may be asked to investigate whether a separate research unit for opium and alkaloid should be set up in Ghazipur or Neemuch, or the work be entrusted to an outside specialised institution.

(Para 16.52)

131. The yardstick of samples per chemist in the opium and Alkaloid Works be taken as 2000 tests per year.

(Para 16.54)

132. The yardstick per chemist working on the finished and intermediate drugs in the Alkaloid plant laboratories be taken as 1750 tests per year.

(Para 16.55)

133. There should be parity in the number of posts and pay scales in Neemuch and Ghazipur factories.

(Para 16.56.1)

134. The Committee recommends for the opium factory, Neemuch, a Chemical Examiner Grade-I in lieu of Chemical Examiner, Grade-II.

(Para 16.56)

135. For Government Opium and Alkaloid Works,

Ghazipur the following reorganised set up is recommended:-

i)	Deputy Director, Grade I (Rs.1800-2000)	- 1 Post
ii)	Deputy Director, Grade II(Rs.1500-1800) incharge of Alkaloid Works.	- 1 Post
iii)	Assistant Director (Production) in the scale Rs.1100-1600.	- 1 Post
iv)	Assistant Director for Research and Development and Quality Control (Rs.1100-1600).	- 1 Post
v)	Scientific Officer (Research and Development) (Rs.700-1300).	- 1 Post
vi)	Scientific Officer (Rs.700-1300).	- 7 Posts
vii)	Analyst (Rs.550-900).	-27 Posts

(Para 16.56.1)

STAFF MORALE AND REDRESSAL

136. The frustration among the chemical service and the loss of incentive that results can be rectified only by improving their status and emoluments and working conditions.

(Para 17.5)

137. An established Central Service, Class-I is recommended in lieu of several grades of chemists to be designated as Central Revenues Scientific/Technical Service.

(Para 17.5)

138. Better methods of recruitment, training and service structuring are recommended.

(Para 17.5)

139. The transfer of Analysts be done only within the region.

(Para 17.6)

140. The Technical Assistants should be restricted to the laboratories to which they are recruited and may be transferred on request.

(Para 17.6)

141. All India seniority list be kept for Analysts as well as for Technical Assistants.

(Para 17.8)

142. Ghazipur and Neemuch must have their self-contained Colony. In other places technical service officers must be treated on par with officers of the executive branch in the matter of allotment of quarters.

(Para 17.9)

143. In fixing the number of scientific officers and supervisory officers and Committee has based it on the fresh yardstick arrived at.

(Para 17.21)

144. There should be one grade of chemical Assistant below the Class-I services and that grade should carry a scale of Rs.550-900.

(Para 17.23)

145. The present vacancies in the posts of laboratory Attenders should not be filled up. A new class of laboratory assistants to be designated as technical assistants may be recruited instead on a better scale of pay.

(Para 17.28)

STAFF STRUCTURE, RECRUITMENT ETC.

146. The recruitment to Class I posts in Central Revenues Scientific/Technical Services should be partly by competitive examination and partly by promotion.

(Para 17.27)

147. The recruitment for chemical assistants (analysts) and technical assistants should be on a regional basis, and these officers should not be

the region. The

constitution of a recruitment Committee and the procedure for recruitment are suggested.

(Para 17.28)

148. The Chief Chemist should be designated as Director of Central Revenues Laboratories and Scientific Adviser to Department of Revenue (Customs, Excise and Narcotics). The designations of the other posts recommended are Joint Director, Deputy Director Grade-I, Deputy Director Grade-II, Scientific Officers and Analysts.

(Para 17.29.1)

149. The heads of the following five laboratories should be designated as Deputy Director, Grade-I :

1. Central Excise Laboratory, Bombay.
2. Customs Laboratory, Bombay.
3. Customs and Central Excise Laboratory, Madras.
4. Customs and Central Excise Laboratory, Calcutta
5. Central Excise Laboratory, Delhi.
6. Opium and Alkaloid Laboratories, Ghazipur.

(Para 17.29.2)

The Heads of the three laboratories be designated as Deputy Director Grade-II:

i) Central Excise Laboratory, Baroda;
ii) Central Excise Laboratory, Kanpur;
iii) Customs and Central Excise Laboratory, Cochin.

(Para 17.29.3)

150. In the major laboratories, divisions (commodity-wise) are suggested and each division will be under an Assistant Director.

(Para 17.29.4)

151. The bulk of testing work will be done by junior time scale "scientific officers" and "analysts", assisted by technical assistants

(Para 17.29.5)

152. The services may be designated as the Central Revenues Scientific/Technical Service and this should be included in the list of established services along with Customs and Excise Services.

(Para 18.1)

153. The following scales of pay are suggested:-

a) Director & Scientific Adviser.	- Rs.2500-125/2-2750.
b) Joint Director.	- Rs.2000-125/2-2500.
c) Deputy Director Grade-I	- Rs.1800-100-2000.
- Do - Grade-II	- Rs.1500-1800.
d) Assistant Director.	- Rs.1100-1600.
e) Scientific Officer.	- Rs. 700-1300.
f) Analyst (Non-Gazetted)	- Rs. 550-900.
g) Technical Assistant (Non-Gazetted).	- Rs. 425-700.

(Para 18.1)

Each laboratory should have a librarian and he should be graduate with diploma or with certificate in library science and also a store-keeper.

(Para 18.1)

154. The recruitment to the Class-I cadre should be on all India basis by Union Public Service Commission.

(Para 18.3)

155. Educational and other qualifications and type of papers for the competitive examination are suggested.

(Para 18.4)

156. The departmental promotion quota to Class-I cadre should be restricted to 50 per cent; except on initial formation.

(Para 18.7)

157. Promotion should be decided by departmental promotion committee in which there should be an outside scientist and a representative of the Union Public Service Commission.

(Para 18.8)

158. For top posts of Director and Joint Directors, it should be advisable to follow generally the procedure adopted in all the National Laboratories, i.e. normally by promotion, and by open selection, if a suitable officer from inside the service is not available. (However this should be avoided as far as possible).

(Para 18.9)

159. All existing Chemical Assistants who may be absorbed in class-I service should be sent to the training school for an initial foundation course in Customs and Excise laws and procedures. For future direct recruits a regular training programme during the probationary period and a departmental examination are suggested.

(Para 18.11.1)

160. Once in five years, both the officers in junior time scale and senior time scale should be sent for refresher courses in one of the National Laboratories or specialised scientific institutions.

(Para 18.11.4)

161. The Director should arrange for seminars periodically to encourage study and research.

(Para 18.11.5)

162. Officers of the service with aptitude for research work may be encouraged to write 'papers'.

(Para 18.11.5)

163. Laboratory attenders may be considered as semi-skilled workers. There is a case for giving them the scale of Rs.260-350.

(Para 18.12)

164. A pay scale of Rs.260-430 without Efficiency Bar is suggested for Laboratory Clerks.

(Paras 18.14 & 18.16)

165. Officers of the Central Revenues Scientific/ Technical Service may be sent on deputation to the various other Directorates viz. Directorate of Training, Directorate of Drawback, Directorate of Tax Research etc.

(Para 18.21)

166. Officers of the Central Revenues Scientific/ Technical Service can be sent on deputation to outside departments viz. Ministry of Commerce and Industry (Director General of Technical Development), State Trading Corporation, Indian Oil Company, Indian Petro-chemicals Corporation Ltd., etc.

(Para 18.22)

EXPEDITING TEST REPORTS

167. Various steps have been suggested for expediting test reports and re-test reports.

(Paras 19.1 to 19.18)

CHAPTER - 2

LABORATORY SERVICES

SECTION - 1

GROWTH OF THE CENTRAL REVENUES CHEMICAL SERVICE AND ITS PRESENT ROLE:

2.1 The history of the Central Revenues Laboratories is closely linked with the development of the Customs department and the Customs Service. Before 1918 the Customs Department was managed by the then provincial Governments on behalf of the Government of India and the tariff then was relatively simple and the number of items that required to be sent for chemical analysis was very few. The State Governments obviously used their laboratories whenever testing of Customs samples was found necessary. The transformation took place when the Central Government assumed direct charge of Customs administration, and when they constituted for this purpose what was then known as the Imperial Customs Service. Prior to World War-I there was a laboratory at Kasauli which was largely used to serve Provincial Excise requirements. With assumption of direct control over Customs, this laboratory was used by the Government of India as a Customs laboratory and was eventually transferred to Calcutta which was then the most important port. It was designated as the Customs and Excise Laboratory as by that time a few Central Excises had been introduced. Dr. H.B. Dunnicliff, C.I.E. who was an eminent Professor of Chemistry was appointed as Special Chemical Adviser and he drew up the scheme for expanding the Laboratory services. The work-load of the laboratories which were then situated at the major ports of Calcutta, Bombay, Madras and Karachi was lighter than what it is at present. Since then the laboratory services have grown up and we have at present 15 laboratories of which nine are attached to Custom House/Central Excise Collectorates, four Petroleum Refineries and one each at Ghazipur and Neemuch. The work load of these laboratories began to increase with a large number of articles, produced or manufactured in India, being subjected to duties of Excise in successive budgets. When the volume of work at Bombay became unmanageable and the Bombay Custom House laboratory could not handle all the Excise samples, a separate laboratory for Central Excise became necessary and one was set up the year 1977. With the development of Cochin as a major port, a laboratory was set up in Cochin too in the year 1957. As situations arose, new laboratories were set up. A laboratory was set up in Baroda in 1970 to deal with the large number of Excise samples from the industrial belt in Gujarat. Okha and Kandla had such laboratories to deal with the Customs samples from the large number of ports on the Gujarat coast. Eventually Okha laboratory was closed down and the Kandla laboratory was upgraded in 1977. Goa Custom House had to be provided with a laboratory because of large exports of iron ore, liable to export duty through that port. With the opening of Petroleum Refineries in several parts of the country it was found necessary to set up laboratories near these Refineries. There are one each at Trombay, Visakhapatnam, Barauni and Digboi.

2.2 Even with the creation of so many laboratories there are still several Collectorates of Central Excise with no laboratories of their own. An Expert Committee under the then Member (Customs) Shri E.S. Krishnamurthy was set up in 1957 to examine the problems relating to the laboratories with terms of reference similar to those pertaining to the present Committee. The Customs Study Team observed even as early as 1967 that with increased volume and complexity of trade and the advance in technology every where and the imposition of various regulatory measures like import controls, export controls and the restriction on several commodities, the volume and the complexity of the work have increased. The Customs Study Team also observed that the Chemical Service as then constituted was not well-balanced and that the number of senior posts, to which a junior officer could aspire was not adequate to provide the necessary incentive for hard work. While the pay scales in all the Central Services and even provincial ones have been upgraded, only marginal changes have been effected in respect of Chemical Services.

2.3 We have referred in the earlier paragraphs to the enormous growth in the tariff. The officers in the laboratories have got to be familiar with the Customs and Central Excise tariffs, the various orders issued on Drawback concessions and also with the import and export trade control schedules. Besides both in the Customs and Excise Tariffs, numerous notifications are issued from time to time varying the basic rate according to end use and other factors. We have annexed to the report a statement received from one of the major Custom Houses, which gives the list of tariff heads and sub-heads in respect of which tests are conducted (Annexure IIA). Similarly a comprehensive list of excisable articles requiring test has also been compiled and annexed (Annexure IIB). In addition to the

Customs and Central Excise tariffs, the administration of the Drawback Schedules also throws considerable work on the laboratories. (Vide Annexure VIII). These statements reveal that goods which can be passed without test both under the Customs and Excise Tariff are fewer than those which require test.

SECTION - II

COMPLEXITY OF WORK

2.4 One of the Central Revenues Chemical Service Officers has compiled a list of complex problems which are referred to the laboratory. Others have also mentioned some as "difficult cases". A list of such complex cases quoted by these officers is annexed (Annexure IIC). We give in this annexure such complex and difficult cases to illustrate the above as well as to indicate that analytical work is always not simple and straight forward. Inventiveness, study and creative thinking are involved in many stages of laboratory work. Some of these problems can be attributed to :

i) the complexity of the tariff and various exemption notifications;

ii) absence of precise definitions to several accepted trade and scientific descriptions;

iii) determination of end use purely on the basis of test is seldom satisfactory; and

iv) inadequacy of equipment.

Adoption of I.S.I. specifications in as many cases as possible will be a partial solution to these problems.

2.5 Another practice which has assumed enormous proportions is the necessity for explaining the analytical report and interpreting it in the light of tariff description. Though the normal function of the laboratory is to give only a factual analytical report, in view of the complexities of the tariff and the use, sometimes, of highly technical language in the schedules and the notifications, Importers, Exporters and Producers of excisable articles who were resting content with purely giving trade descriptions or invoice descriptions, have now to give descriptions in scientific terms which will fit in with the tariff description or the descriptions given in the exemption notifications. Not all Tax-payers would be able to give a description which would actually conform to the tariff description and the tests which are undertaken largely for determination of the material content of the article becomes now inadequate and the chemists are asked by the assessing officers to give the correct tariff head under which such an article can be classified.

2.6 This would involve taking into consideration in some cases the actual use of the article in the particular areas; and in some other cases even the ultimate use which may be unknown at the port of import or place of manufacture. All these add to the laboratory work of the Chemist. Further consequence is that, much of his time and effort are also taken in searching out the uses of the products in the technical literatures. The Committee has observed that even officers at appellate and revisionary stages call for precise opinion on the application of specific tariff items to distinguish the commodities. While both under the Customs and Central Excise Acts responsibility for classification rests with the assessing officer, more and more assistance is thus being sought from the laboratory officers for interpreting, the tariff. Modern technology is putting into the market almost everyday new sophisticated products from several industries. Even those assessing officers who have scientific background require advice from the professionals in the laboratories. During the visit of the Committee to various laboratories, Central

Revenues Chemical Service officers urged that the advice tendered by the laboratories on classification matters be made binding on the executives by suitably amending the statute. Though the practice has become inevitable, the Committee does not favour this claim for administrative and other reasons. Dual responsibility in this matter is risky and likely to be abused. The Chemists role is that of the export adviser and the final responsibility is that of the assessing officer.

2.7 We have gone into this matter of the complexity of the tariff, difficulties in tests, and the interpretative role of the chemists primarily with a view to emphasize the need for improving the quality, status and role of the Chemical Service.

CHAPTER - 3

THE ROLE OF THE LABORATORIES IN THE ASSESSMENT OF "GOODS".

3.1 When the Customs Laboratories were first set-up, the Tariff was relatively simple and the concept was that the laboratories will analyse the samples and report only the findings; and the assessing officer will exercise his judgement for classifying the goods according to the Tariff. In fact, specific instruction has been issued by the Board that the laboratories should not offer any opinion on classification matters. But the position has now changed with the tariff becoming highly technical, e.g. items 15A (Resins), 15AA (Surface Active Agents), 14D (Organic Dye Stuffs) etc. of the Central Excise Tariff. Similar items exist in the Customs Tariff also, as this is based on CCCN(BTN) Tariffs. The Drawback schedules also mention several items which are rather technical. The Third Pay Commission had also accepted the contention that the officers employed in these laboratories are required to give technical advice on the issue, referred to them by Customs and Central Excise Officers in connection with their work.

3.2 Many Collectors mentioned that it has been found helpful in several cases to consult the senior officers in the laboratories on matters of classification and allied aspects in deciding various cases. It has been the experience that such consultation arises not only at the primary decision making level but also at the appellate and revisionary stages.

3.3 We give below some instances of such consultations at the Ragional Laboratories:

S.No.	Description	Query
1.	2.	3.
	Grey Plasticine.	For Chemical Examiner's opinion, it is classifiable under heading 34.01(3) of CTA as a lubricating preparation and under item 11A of C.E.T.
2.	Aeroshell Grease-5.	For Chemical Examiner's opinion whether the product under reference is accessable under heading 27.10 (10) CTA with C.V. duty under Item 11A, C.E.T.
3.	Vulcaprene-solution MS.621 and Vulcabend TX.	For Chemical Examiner's opinion regarding the classification of the above products under CTA and C.E.T.
4.	Fibrefrax Cement, Fibrefrax tape, and Fibrefrax fibre.	For Chemical Examiner's opinion regarding the classification of the product under CTA and C.E.T.
5.	Ethyl Benzene.	Ethyl Benzene is a synthetic product and not a petroleum derivative and therefore falls outside the scope of item-6. Prima facie the contention of Hindustan Polymers Ltd. appears to be correct. However the views of the Deputy Chief Chemist and Tariff Cell may be taken before a reply is sent to them.
6.	Pilocarpine.	Pilocarpine Nitrate B.P. in tins of 25 gms.(net) has been assessed to duty under chapter 29.01/45(13) as Pharmaceutical chemicals without C.V. duty.

1.	2.	3.
		Audit has disputed the assessment and has suggested that the goods should be assessed under Chapter 30.03(i) as medicaments with C.V. duty under item 14E CET holding that the goods are used by eye doctors for dilation purposes. As the matter is not free from doubt we may seek the opinion of the Chemical Examiner regarding CTA/ CET classification please.
7.	Graphite Stopper Head.	Whether classifiable under Chapter 69 as claimed.
8.	Vitavax.	Whether eligible for concession under notification No.63/73-Denovo examinations of appeal.
9.	Polyblend PVC/ Nitrile Rubber Blend.	Whether C.V. duty levied under item 15A, CET is justified.
10.	Polyblend (Nitrile Rubber PVC).	Appellate Collector's note dated 24.6.78 addressed to Dy. Chief Chemist, in connection with T.O.144/ 30.5.78.
11. (a)	Subsphen.	Whether Rubber Chemical for purpose of assessment.
(b)	Subsphen.	Whether Rubber Antioxidant.
(c)	Subsphen.	Whether rubber antioxidant (Denovo examination).
12.	Balsam Tolu BPC	Whether Balsam falling under Chapter 13 of Resionid under Chapter 30.
13.	Paravolt CF	Classification.

1.	2.	3.
14.	Dinonyl Phenol.	Whether chargeable to countervailing duty as a rubber antioxidant.
15.	Alpha Naphthol.	Whether falls under item 14D of C.E.T. for C.V. duty.
16.	Alpha Naphthol.	Whether countervailing duty is chargeable.
17.	Silver Cement.	Correct classification.
18.	Weather proof plastic sealing compound R.391.	Classification.
19.	Tungsten Wire for manufacture of electrical filament.	Whether wire rod or wire, if latter, whether resistance wire.
20.	Stencil base Tissue type 971.	Whether stencil base paper.
21.	Magnesium Oxide (Light) Appeal file.	Whether the goods satisfies the description in the licence i.e. heavy Magnesium Oxide.
22.	Manganese Di-oxide Ore for Battery Cell. (Appellate Collector reference).	Whether Chemical or Ore for purpose of classification.

3.4 The Chief Chemist's office has given an exhaustive list of opinions so sought. He gets on an average 250 files from the Board every year for offering opinion on various matters of classification. A few illustrations are cited below:-

1. Draft Audit Para 64-Levy of auxiliary duty at the incorrect rate on "ethion".
2. Compressed Gases, scope of the Central Excise Tariff item 14H.

3. Assessment of Separan A.P. 30 whether it is classifiable under 15A, C.E.T.

4. Meta Amino Phenol, whether it is classified under 14-D, Central Excise Tariff.

5. Classification of "Vin".

6. Draft Audit Para, incorrect calibration of oil tanks containing mineral oil products.

7. Asbestos Spun Yarn - Duty liability.

8. Iron and Steel - Iron castings under 14(iv)(I) of Central Sales Tax Act, 1956.

9. Tamarind Seed Powder - Classification whether it is classifiable under 15-C, Central Excise Tariff.

10. Waste Rayon and Synthetic fibre Waste - classification.

11. Classification of "Incol" of MOPL as furnace Oil.

12. Aerated Waters - Scope of the term "Blended flavouring concentrates", mentioned in the relevant Notification.

13. Classification of undrawn nylon producers waste in Central Excise Tariff.

14. Laminated fabrics whether it is coated fabric for the purpose of classification.

15. Fibre Glass tubes/cylinders whether attracts countervailing duty under 22F, Central Excise Tariff.

16. Paints and Varnishes - cutback asphalt free flowing liquid condition for exemption.

17. Losses of gases within the factory of production - Draft Audit Para.

18. Acrylic bulked yarn, whether it is classified under 18(iii) Central Excise Tariff as "other textured yarn".

19. Gases used in the manufacture of duty exemption.

20. "Raw Naptha" - Classification of the raw naptha mentioned in the notification.

21. Appellate Order on classification of transparent quartz plates - revision under Section 131(3) Customs Act.

22. Revision application - M/s. Calcutta Co. "Dementholised Peppermint Oil".

Whether qualifies for exemption or not.

23. Bata compound - Collectors Conference 1978 reference for deciding classification.

24. "Hexamine" of technical grade whether it is same as Hexamine pure form.

25. Napthalene - determination of origin that is whether classifiable under 11-A, Central Excise Tariff or not for the purpose of Countervailing Duty.

3.5 The work load and responsibilities of Chemical Service Officers have diversified at all stages. At the regional laboratory level the senior chemical service officers have to attend the following in addition to their normal duties:-

(a) appear before courts and adjudication authorities in connection with disputed Customs and Central Excise cases.

(b) attend tariff conference.

(c) attend Indian Standards Institution Committee meetings as Chief Chemist's representative.

At the Headquarter's laboratory the Chief Chemist has to attend to several responsible additional items of works which are mentioned below:-

(a) appear before Courts, Revisionary Appeal authorities as expert witness.

(b) attend tariff conference.

(c) attend Indian Standards Institution Committee meetings.

(d) attend Committee of Management for the Opium and Alkaloid Works and the Narcotics conferences.

(e) assist officers before the Public Accounts Committee, Estimates Committee and inter ministerial meetings etc.

(f) attend to C.C.C.N.(B.T.N.) chemist Committee papers.

All these add to the work load of the Chemical Service Officers at all stages. The Chief Chemist is virtually functioning as the scientific adviser to the Board and the Revenue Division. This trend is largely the result of the complexity of the Tariffs and the anomalies which have crept into the various tariff schedules and notifications due to the frequent use of scientific terminologies.

CHAPTER - 4

PROCEDURE FOR DRAWAL OF SAMPLES THEIR TESTING, REPORTING, ETC., FREQUENCIES FOR DRAWAL OF SAMPLES.

SECTION - I : SAMPLING

4.1 The authority for drawal and testing of samples is contained in Section 144 of the Customs Act, 1962 and Rule 56 of the Central Excise Rules, 1944. For convenience these are reproduced below :

4.2 Extract from the Customs Act, 1962

Power to take samples.

144(1) The proper officer may, on the entry or clearance of any goods or at any time while such goods are being passed through the Customs area, take samples of such goods in the presence of the owner thereof, for examination or testing, or for ascertaining the value thereof, or for any other purpose of this Act.

(2) After the purpose for which a sample was taken is carried out, such sample shall, if practicable, be restored to the owner, but if the owner fails to take delivery of the sample within three months of the date on which the sample was taken, it may be disposed of in such manner as the Collector of Customs may direct.

(3) No duty shall be chargeable on any sample of goods taken under this section which is consumed or destroyed during the course of any test or examination thereof, if such duty amounts to five rupees or more.

4.3 Extract from Central Excise Rules, 1944.

Rule 56 - Taking of samples for Excise purposes.

1. The manufacturer shall permit any officer to take samples of any manufactured or partly manufactured goods (or of any intermediate or residual products resulting from) the manufacture thereof, in his factory.

2. The officer referred to in sub-rule (I) shall conduct the test from the samples taken under that sub-rule and communicate to the manufacturer the result of such test.

3(a) Where the Officer is of the opinion that the samples after completion of the test can be restored to the manufacturer, the officer shall send a notice in writing to the manufacturer requesting him to collect the samples within such period as may be specified in the notice.

(b) If the manufacturer fails to take delivery of the samples within the period specified in the notice referred to in clause (a), the samples shall be disposed of in such manner as the Collector of Central Excise may direct.

4. Where a manufacturer is aggrieved by the result of the test, he may within ninety days of the date on which the result of the test is received by him, request the Assistant Collector of Central Excise, that the sample be retested.

4.4 Technology of Sampling.

Sampling is an important step in the testing work. A sample submitted to the laboratory is assumed to be truly representative of the material or product from which it is drawn. The evaluation of the properties or composition of the sample should be capable of application to the entire lot of goods from which the sample is drawn. For homogeneous materials, such as a clear solution, any one portion is a representative sample. For non-homogeneous materials, it is the usual practice to select several samples to constitute the test sample which could be expected to yield values that would hold good for the entire lot. For preparing or drawing such a representative sample, officers generally rely on their subjective judgment and experience. However, sometimes, samples taken out so prepared may yet not be fully representative. Therefore certain guidelines are necessary.

Representative Character.

The regulations to be prescribed for correct sampling should cover the following points:

i) acceptability i.e. a sample is taken because the assessing officer must be certain that the material satisfies the specifications required under the tariff or other regulations; and

ii) Avoidance of sometimes even detection, of contamination. He must make certain that the sample is not drawn from the contâminated part of the material sampled. Goods lying exposed in the docks or in factory yard may on their outer sides and even in the interior be contaminated by dirt, atmospheric action, humidity etc. and a sample carelessly drawn will not be acceptable. It is not uncommon for some commodities to be covered all round with some other material to avoid detection of the inside contents for example opium and Dangerous Drugs. Articles made of precious metal may be coated with base metal.

iii) Identification of material i.e. to identify on unknown material or to identify the tariff classification of a material hitherto not imported or produced or known in the Trade, the classification of which has to be determined purely on scientific tests.

Based on the collective experience, detailed instructions could be issued commodity-wise, by the Board bearing in mind the objectives mentioned above.

4.5 Random Sampling.

To avoid drawing of excessive number of samples and to avoid accumulation in the laboratories random sampling is resorted to. But this does not mean haphazard selection. It should be done in such a manner that each item or unit in the particular group being sampled has an equal chance of being selected. Again the underlying principle is the representative character. Some of the difficulties encountered in random sampling of materials are given below:-

(a) Lack of adequate data.

This is particularly true of imported goods as well as some intermediate goods in the process of manufacture;

(b) Physical difficulties.

The physical condition or location of the material at the time of sampling might not help in securing in adequate measure samples of a truly representative character. Under such circumstances one solution is to sample the material before it is piled up i.e. while it is in motion, for example, on a conveyor belt or in a pipe line. Otherwise a certain degree of shifting or turning and parting will be necessary. These practices are possible only when the goods are homogeneous; when the goods are not homogeneous as in the case of mineral ores or even crude viscose material, careful mixing and/or powdering of random samples will have to be resorted to; the samples having in the first instance been picked out in a manner so as to provide evenness and uniformity.

(c) Excessive Costs.

Mixing and blending are extremely effective in reducing variability but are frequently not possible with many materials. To achieve the desired and necessary degree of sample precision, a large number of units may require to be selected. In such instances, the direct and indirect costs of sampling may become prohibitive. Methods will have to be devised to avoid or reduce such cost.

4.6 Indian Standards Institution Standards for Sampling.

In view of the importance of correct sampling the Indian Standards Institution has laid down detailed procedures for various goods. To quote a few:-

I.S.1080 (Part-I)1968	Method of sampling and test for paper and Allied Products.
I.S.1408 - 1966	Methods of sampling Iron Ore.
I.S.1949 - 1967	Methods of sampling Manganese Ore.
I.S.1538(Part 2) 1974	Methods of sampling and physical tests for Refractory Materials.
I.S.1548 - 1969	Manual on Basic Principles of lot sampling.
I.S.4905 - 1968	Methods for Random Sampling.
I.S.5002 - 1968	Methods for determination of sample size to estimate the average quality of a lot or process.

I.S.1999 - 1962	Methods of sampling Bauxite.
I.S.2051 - 1962	Methods for sampling leather footwear.
I.S.3704 - 1966	Methods for sampling of light metals and their alloy products.
I.S.4156 - 1967	Methods for sampling of barytes.
I.S.4166 - 1967	Methods for sampling of ilmenite and rutile.
I.S.171 - 1973 and I.S.1315 - 1959.	Dealing with textiles.

The Departmental executive staff as also junior staff in the laboratories should familiarise themselves with such procedures. In any case all our officers concerned with sampling should make themselves familiar with them and follow similar procedures.

4.7.1 Differences between Customs and Excise provisions on sampling.

(a) There are two basic differences between the provisions of the Customs Act and the Central Excise Rules. The latter specifically provides for communication to the manufacturer of the excisable goods the result of the test. It also provides for the manufacturer who is aggrieved by the results of the test, to ask for retest. The drawal of samples in triplicate and various other procedures, recognises the possibility of retest. The Committee received complaints that results of test are not communicated to the manufacturers directly.

(b) The position regarding Customs sampling is briefly summarised below:-

Customs samples are usually drawn in the presence of the party by the Custom House Officers and only when the owner of the goods so desires duplicate samples are drawn. The party/party's representative also signs on the Bills of Entry that he is satisfied with the manner of sampling. A retest can be done either in the concerned Custom House Laboratory or in the Control Laboratory, Delhi. The sample received for retest is taken for test after prescribed retest fee has been collected and retest is done only on the remnant or original sample tested in the Custom House Laboratory.

4.7.2 Sometimes the sample received may not have been drawn properly and the sample drawn for the supernatant layer could give a different composition from that of the whole sample after stirring. The Committee had occasions to inspect the drawal of chemicals (Theophylline and Berberine hydro-chloride) in one of the major ports. There was prior endorsement on the acceptance of the samples on the Bills of Entry. There was a separate register maintained indicating the sampled goods. We have two observations to make here.

(a) The samples were drawn using a wooden ladle. The same wooden ladle was used for the sampling both the drugs. This could lead to contamination and vitiate the test result. In sampling such drugs and fine chemicals, great care should be taken and clean instruments need be used so as to prevent contamination.

(b) It was felt that the nature of the container in which the samples are packed should be indicated in the Register so that substitution of the samples can be detected if done later.

4.8 Customs - Procedure for Drawal of Samples.

On the Customs side we received detailed information only from the Custom Houses at Bombay, Madras and Cochin. The information from Calcutta was received very late. There appears to be sub-committees constituted in the Calcutta and Bombay Custom Houses and elaborate instructions for drawal of samples appear to have been issued. There is considerable uniformity between the Bombay and Calcutta instructions. We suggest that these instructions may be adopted by the other ports also and the Bombay Custom House instructions could serve as a model.

4.9 Central Excise - Present Procedure for Drawal of Samples:

In the context of heavy pendency of samples in the laboratories the Board had issued two separate instructions to the Collectorates in 1977. One relates to the revised frequency of drawal of samples of excisable commodities and the second to the sending of only a given percentage of samples drawn by the field officers for testing in the laboratories. While it is necessary that the samples are not drawn indiscriminately it is equally desirable in the interest of revenue and assessees themselves, that the Department should lay down proper procedures for drawal of samples, bearing in mind the general objectives of acceptability and representative character explained in earlier paragraphs of this chapter. The aforesaid relaxation would therefore bear a review. There should also be periodical exercises for reviewing the orders on drawal of samples - whether to increase or reduce the periodicity etc. The following two questions included in the questionnaire (Annexure IE) stem from the above considerations :-

(a) "Is the frequency of sampling excessive for any specific goods or articles".

Or

> "Can you suggest names of goods for which frequency of sampling should be more or can be reduced."

No concrete suggestions have been received on both these aspects.

4.10 Central Excise : Frequency of Sampling.

Most of the medium and small scale textile units are new, and are yet to achieve complete standardisation and uniformity in yarn production. In the circumstances and in view of the revenue interest involved, the frequency of sampling in some cases may have to be reviewed. In fact the Trade Associations have pressed this need. A test holds good under the existing orders not only for the lot from which the sample is drawn, but for subsequent lots manufactured in the looms till a fresh test is ordered. The risk to revenue may therefore be great if production is not uniform. We are of the opinion that while random sampling can be adopted for imported textiles and yarns on the Customs side, in the case of indigenous textiles and yarn there should be more frequent drawal of samples. Though for exported goods random sampling may be permitted for drawback purposes, the frequency may have to be reviewed in the interest of revenue. The frequency would necessarily vary with the type of goods and the standing of the particular manufacturer. A continuous study has to be undertaken for this purpose by a standing committee consisting of the Director of Inspection, the Director of Drawback, the Chief Chemist and a representative from an organisation like Indian Standards Institution. This exercise should be done at least once a year so that the existing procedures can be reviewed and optimum quantum of frequency is prescribed. The Committee could not examine this matter commodity-wise in depth due to want of trained staff and other constraints. However, we are advised that an attempt has been made to work out the frequency of drawal of samples for the various commodities on the Central Excise side, by the Directorate of Inspection in consultation with Chief Chemist. The papers available in Central Revenues Control Laboratories were examined. The conclusions arrived by these two organisations (Annexure IV A) appear to be reasonable and deserved a fair trial. This would also underline the need for review of the 1977 instructions referred to above. Any change in the frequency for drawal and testing of samples will necessarily have to be related to the procurement of equipment and positioning of staff. We were handicapped in the determination of exact staff complements owing to the operation of these orders. The Board's instructions contemplate that the Assistant Collector should examine the reduction in number of samples forwarded for test. Incidentally it also came to the notice of the Committee that the discretion vested with the Assistant Collectors is exercised by the Inspectors which need to be discouraged. Steps also need to be taken on the Central Excise side to tighten up the arrangement for drawal, storage etc. of samples drawn for test. The Committee feels that a case exists for accepting by the Department, of manufacturer's declarations of Indian Standards Institution certified goods, medicines of reputed firms and Agmark label products.

4.11 Congestion in ports and Accumulation of samples in laboratories.

The Committee had the opportunity to go through extracts of the report of the Committee headed by Shri V.R. Mehta of the Ministry of Shipping and Transport on congestion in ports. This Committee has made a number of useful suggestions and these deserve serious study. We reproduce below the following recommendations of that Committee:-

> **1.15.214** The Committee recommend that in respect of uniform or homogeneous lots, the examination order in the Customs House should indicate only total number of packages to be examined, leaving it to the Appraiser in the shed to select the packages to be examined on a random basis. This procedure should be extended to all the Ports.
>
> **1.15.215** The Committee recommend that the Customs should not only augment the facilities in their own laboratories but Customs, Drug Control and Health authorities should also make use of reputed private test laboratories or coaching and research institutions like Indian Institute of Technology, Universities, Sasmira etc. for this purpose so that no consignment is delayed on this account for over 7 days at any of the Ports. The Committee also recommend that in case of drugs, the laboratories of the Food and Drug Administration of the Maharashtra Government should also be used.
>
> **1.15.216** The Committee recommend that where, in exceptional circumstances, consignments are delayed due to delay in testing and analysis of samples, Customs and Health authorities should permit provisional clearance of goods under test by the importer on his furnishing individual bonds for fulfilling the duty or penalty obligations. The Committee also recommend that where the facility for provisional clearance is permitted by Customs or Health authorities and the importer still does not remove the goods from the Port, any request for waiver of Port demurrage charges for the period of delay in testing should not be acceded to.

The attention of all Collectors should be drawn to these recommendations so that necessary action can be taken to avoid delays in the matter of testing and consequently clearance of goods. We have, however, dealt with separately regarding the question of testing of samples in outside laboratories in Chapter 5.

4.12 Packing, Transport etc. of samples.

The samples drawn should be packed in appropriate containers, labelled and sealed. On the labels of the containers should be clearly written all particulars, linking the samples to the goods and relative documents. Thereafter, these should be immediately despatched to the laboratory without any loss of time. This will help in ensuring security, identity of the samples, protection against contamination etc. The transit arrangements for despatch of these samples in various Ports differ. Often samples lie in sheds or in the collection points till the next day even in major ports. This should be avoided and steps should be taken to deliver them to the laboratories at least twice a day. This will reduce the risk of contamination and deterioration, besides minimising risk of substitution by collusion or otherwise. It will be necessary that samples(import) containing Volatile Organic Solvents such as Paints and varnishes, Resin Solution etc., and Milk powder and products thereof, Fish oil, Tallow, V.N.E. Oils and all alcoholic beverages and preparations, Petroleum products, Surface Active Agents, Starch and Starch products should be despatched to the laboratory with greater expedition and care, and should be tested on priority basis. Apart from this the Committee feels that the test validity period for branded goods or proprietory products of reputed manufacturers, may be enhanced thereby reducing frequency. A few examples of such products are : Rubber Chemicals (Vulcacit, Vulcanox, Santoflex etc.), Surface Active Agents (Tween, Span, Armeen). Synthetic Rubber (Hycar, Paracril, Bayprene), Plastic moulding powders not covered by exemption notifications (Teflon, Ultramid etc.). In these cases manufacturer's declarations can be accepted. Only in cases of discrepancies between the manufacturer's description and the description on the invoices etc , the samples should be drawn and sent for test.

During the visit of the Committee to the various Central Excise Collectorates it was pointed out that samples were drawn from factories which are situated away from 200 or 300 miles from the nearest departmental laboratory. Detailed instructions exist for packing, sealing and despatch of samples. However, as certain products like Food Products, Aerated waters, V.N.E. Oil, Vegetable Oils and P and P medicines tend to deteriorate with passage of time, such samples should be despatched to the laboratories with greater expedition and should be tested on the priority basis. Greater care should be taken in packing these samples.

4.13 Steps for reducing frequency of Sampling in Customs Houses.

Bombay Custom House has suggested that :

i) Frequency of tests for bulk cargo like ores should be once in two years. It has also suggested that for rubber chemicals, dyes, paints, varnishes, bonding agents and similar goods the frequency can be kept at three years instead of two years.

ii) Consignments of scrap (brass, copper, plastic) need to be tested every time.

iii) Goods from reputed manufacturers can be tested once in three years.

iv) For items like asbestos products, high aluminium grading media, ceramic products and fibre glass products the period of frequency can be raised from one year to two years, in the light of past experience. If this be the case, product imported from reputed manufacturers may be tested once in three years.

Cochin Custom House :

Cochin Custom House has suggested that for well known brands of goods like grease, dyes, resins and potable spirit samples need be tested once in a year.

Madras Custom House :

As in other Custom House, the criteria of drawal of samples depends upon the commodities, the reputation of the supplier, frequency of import, the availability of the manufacturers certificates etc. The suggestion of the Madras Custom House is that if the goods of the same manufacturer are imported by several importers it would be sufficient if a sample is drawn from the consignment of any one importer, and the result of the test applied to all other importers. A second suggestion is, wherever manufacturers certificates are available they should be accepted and testing undertaken only in case where there is suspicion. Madras also suggests that it is not necessary to test goods for Indian Standards Institution specifications for determining the validity of the licences. Edible oils like palm oil and palmolein are being imported. There is no standard specification for these edible oils; but there are specifications under Foods Adulteration Act. As the Port Health Officer and the Drug Control Officers also draw samples for test, for this prupose, the testing by Customs laboratory would appear to be redundant. Clearing Agents in some ports suggested that the Custom House Laboratory should also undertake these tests. This is a matter which involves other Acts and other agencies. We do not favour any change.

4.13.1 We suggest that the major ports should pool their experience and adopt a uniform procedure in the light of our observations.

4.14 Validity period : expiry.

When a consignment arrives just before or about the time of expiry the goods are held up in [illegible] till the test is completed. The problem could be solved by all ports adopting the Bombay practice under which clearing agents are permitted to ask for a test well ahead of the expiry date of the present test, so that the fresh period of validity commences without delay.

4.15 Agency for Transit of Samples:

In Cochin Port the samples are sent to the laboratory through departmental messengers; in the Bombay Custom House sealed samples are sent through Clearing Agents or party's representatives and delivered in the laboratory.

In Calcutta, samples are reported to be collected from the collection points in the sheds and brought to the laboratory twice a day.

Clearing Agents representatives generally urged that their men should be permitted to carry samples with their documents to the laboratory. If the precaution for packing, sealing and registering, recommended by us are strictly followed there should not be any objection to the importers/exporters/clearing agents' representatives carrying the sealed samples to the laboratory. However this practice should not be encouraged if there are sufficient departmental staff to do this work; otherwise the practice could be permitted in the interest of expediting the test processes and for avoiding delays.

4.16 Receipt and entry in the Laboratory:

It is very necessary that the samples drawn are properly recorded in the registers and delivered in the shortest possible time to the proper desk in the laboratory to avoid accumulation and bottleneck. An important matter to be borne in mind at the time of drawal of samples is that if it is a trade product, the importers/manufacturers should also be asked to submit printed pamphlets of the manufacturers giving information helpful for testing. This literature can be obtained by the assessing officer ordering drawal of samples. In any event such literature should accompany the samples to the laboratory and be available to the testing officers. This will avoid another reason for testing delays.

In order to help the trade, there is a facility available in all Custom Houses for the importers to submit in advance the shipment sample before arrival of the goods so that the Custom Houses can give in advance the Indian Customs Tariff classification. This procedure is a guide to the importer but is not entirely binding on the Custom House, as the classification depends on the test of the goods actually imported, Nevertheless, with established manufacturers and importers this is greatly useful.

4.17 Test reports and retest reports:

The laboratory manual has a separate chapter on the mode of reporting in the test Memo. It clearly states that the report must contain enough data to help the executive department to take a decision about assessment, classification etc. A Chemist must not load the reports with figures and observations which are not of use to the executive officers. All such information is noted separately by the Chemist and these records are always available when the retest samples are tested by the Chief Chemist or in the Custom House itself. It is not possible therefore for the appraising department to supply all analytical details when the party demands. When a specific request is made with ample justification for such a scientific data, it should be left to the discretion of the Assistant Collector to give such information on payment of a fee.

4.17.1 For primary testing of samples in the Revenue laboratories no testing fee is charged. Only in case the party is not satisfied with the test report, the question of collecting the retest fee arises. The report of the test carried out by the Custom House laboratories is a Custom document and a copy of this can be supplied to the party only when there is a dispute. In disputed cases details of the first test or/and of the retest can be given to the aggrieved party in the interest of natural justice. This cannot be supplied as a matter of routine.

4.18 There have been complaints about time lag between the original test and the receipt of the retest report from Delhi. In order to minimise this the importer has the option to ask for a retest by the original laboratory itself on payment of fee which is refundable if the test goes in favour of the trade. The Chief Chemist who is the Appellate Authority for retesting samples has assured the Committee that all steps are being taken to expedite the reports within a period of 4 to 5 weeks. Customs and Central Excise Departments have also offered to expedite tests and retests if the importers and manufacturers send the printed pamphlets detailing the composition and use of the articles to facilitate analytical identification.

Much of the delay in testing and in classification is due to the failure of the importer/manufacturer to furnish adequate literature to help both the laboratory and the assessing officer at the initial stage. This requirement should be brought home to the Trading public by proper publicity. The facility for retesting should be made known to all trade Associations concerned with necessary provision to see such facilities are not taken undue advantage of.

4.19.1 Retest of Central Excise Samples :

The Central Excise practice is to draw samples in triplicate and to allow retest on the remnant/duplicate/triplicate samples. The practice obviously originated at a time when there were fewer laboratories and samples had to be despatched to distant laboratories with attendent risks. With large number of laboratories, the position requires to be reviewed. Ordinarily retest should be allowed only on remnant samples as is done on the Customs side. The Chief Chemist observed that there were cases where after the remnant sample was retested and reported, the Assistant Collector has allowed retest on duplicate or triplicate sample on the plea of natural justice. Such practices should be discouraged as it can lead to abuse and the possible substitutions are sometimes suspected.

4.19.2 To sum up the Committee's recommendations in respect of retests in the original laboratory are:

a) Retest should be done only on the remnant samples.

b) Retest should be done by a different analyst and test result should be checked by the head of the laboratory.

4.19.3 In Customs Houses only one sample is drawn and the correctness of the sample is attested by the importers clearing agent. If sufficient remnant is not available there may be difficulties. To over come such difficulties the first sample drawn should be in adequate quantity and the remnant should be preserved with greater care to ensure its complete identity in quality and content. If the goods are not cleared from the docks or are in a bonded warehouse, the Assistant Collector may in his discretion permit drawal of a fresh sample in appropriate circumstances.

4.19.4 In the event of the local Collectorate laboratories having doubts about the method of analysis, adequacy of local equipment, it should open to them to send the retest samples to the Central Revenues Control Laboratory. In the case of the smaller laboratories we are proposing that retests could be done in the appropriate Regional laboratories.

4.19.5 On the question of communication of test reports directly to the parties the pressure is mostly on the Central Excise side. There is some force in these arguments and would advise the Department may communicate the contents of the test reports if sufficient reasons are given for the request.

4.19.6 We are dealing with the special problems relating to Textiles, Drugs, Ores in separate sections (Section II, III and IV). Problems relating to mineral oils are dealt with, in the chapter on Refineries (Chapter 9). Special problems relating to Drawback samples are similarly dealt with separately (Cahpter-8).

SECTION - II

TEXTILES, SAMPLING AND TESTING OF YARN.

4.20 We have thought it necessary to deal at some length with the sampling and testing problems of the Textile Industry, as this is one of our largest industry. The Committee during its visit to various Collectorates had occasions to meet several Chambers o Commerce and Industries as well as Trade Associations in the regions where the textile industries are concentrated. Their criticism of the procedure in the Revenue Laboratories can be grouped under the followin heads :-

i) The test procedure adopted is not made known to them and the correct methods are not followed, by the Revenue Laboratory.

ii) The frequency of drawal of samples is not satisfactory and is not done as per the relevant Indian Standards Institution procedure.

iii) The tolerance applied for test results are quite inadequate.

iv) In case of testing the fabrics tolerance limit is prescribed for testing of counts of yarn only. No tolerance limits for variations in items -

(i) for the compositions of different fibres present in the yarn; and

(ii) also for the number of warp and weft of different yarns used in the fabric,

have been prescribed. This results in disputes.

v) The test report should be directly communicated to them to avoid delay.

The first and last points are of general importance and not particular to the yarn or textile trade and are dealt with elsewhere (4.19.5). In this chapter we deal with the other points at some length.

We give below a long extract from the memorandum submitted by the one of the Associations which generally reflects the views of the textile industry. We have inserted this lengthy extract in view of the fact that this gives a full picture of the problem as seen by the Trade in all the Textile Centres.

> "A number of mills have referred to us that even though the correct count is spun by them, the count as estimated by the Chief Chemist, Central Excise, New Delhi is finer than the nominal count by more than 2.5%, and consequently they have to pay differential excise duty. On examination of the problem we find that the discrepancy arises because of the following :-
>
> Inherent Variability:
>
> "The manufacture of yarn is subject to a number of variations. The raw material itself varies from fibre to fibre, bale to bale and season to season. The machine and tools wear due to use and it is not possible (nor will it be economical) to replace the machines for every small wear and tear. The mechanical limitations imposed by the machines also become a source of variation in the product. Further, a variation in yarn count to the extent of 2 to 3 per cent is possible due to changes in atmospheric conditions. The super-imposition of all these variables results in a large variation in yarn quality.
>
> Thus, in any mill the count as estimated by one lea would be subject to a variation of ± 10 per cent to ± 15 per cent from the average depending on the working conditions.
>
> Sample Size.
>
> "If reliance is placed only on the basis

> of one test, then the actual count maintained by the mills would deviate by 10 per cent to 15 per cent from that estimated from one test. It is, therefore, necessary to test a large number of lea in order to arrive at a fairly reliable estimate of the count.

In view of the above, the Association has suggested a sample size of 25 for all routine tests and 50 to 100 for all tests relating to research projects.

The Indian Standards Institution (ISI), British Standards Institution (BSI), and American Society for testing Materials (ASTM) have specified a sample sizes of 10 to 30 and a tolerance of ± 3 per cent for the count.

Procedure followed by Central Excise Authorities.

We understand that in the procedure followed by the Chief Chemist, Central Excise, New Delhi, only one sample is tested for estimating the count and a tolerance of only ±2.5 per cent is allowed. As the error involved in one test is ± 10 per cent to ± 15 per cent, in a number of cases the count as estimated from one sample would deviate by more than 2.5 per cent even though the mill would be spinning the correct count. In fact there is 25 per cent chance of a mill spinning the correct count, recording a count finer by more than 2.5 per cent if only one test is done.

Thus the very small sample size taken by Central Excise Authorities is mainly responsible for the discrepancy between these test results and that of the mills.

Since the excise levy generally increases as the count spun becomes finer, over estimation of the count would entail the mills paying higher duty even though they spin the correct count. It is relevant to mention in this context that estimating count on the basis of small sample would also fail to identify mills actually spinning very fine or very coarse count. In other words, the existing procedure followed by the Central Excise in estimating the count is unscientific and would mean not only levying higher duty to many mills but also enabling an equal proportion of mills spinning finer counts to pay lower duty.

Suggested Procedure.

"We understand that at present the Central Excise Authorities draw only one sample every fortnight and if the count happens to be finer than the nominal count by more than 2.5 per cent, duty is charged on the higher rate from the date of the previous test. We feel that this procedure is not correct, instead the following is suggested:-

1. The method specified by the Indian Standards Institution for determining the count (I.S.171-1973) be always followed both with respect to the sampling procedure and number of tests.
2. Since this will necessitate a large number of tests to be undertaken either facilities for such testing should be created or the frequency of testing should be reduced to once, say, in two months or more.
3. Since the count produced in a mill normally varies from day-to-day, it would not be fair to charge the mill for the production of the entire period on the basis of tests done on a single day.

While the above can be adopted as a short-term measure, in order to obviate their difficulties and reduce the quantum of tests, as a long-term measure, the existing slab for counts should be revised.

* According to the present rules the various rates of excise duty have been fixed with reference to popular counts such as Nf 84, Nf 69, Nf 51, Nf 34, etc. We suggest that the changes in levy can be fixed at counts which are not commonly spun such as Nf 80, Nf 64,

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*(The problem now does not exist)

Nf 45, Nf 30 etc. If necessary rates of excise duty for different counts may be suitably altered so that the overall revenue is not reduced.

Excise Levy on excess bale weights.

The yarn is sold by the mills in the form of half bales (90.7 kg.) and full bales (181.4 kg.) depending upon the count spun. The actual weight of the bale would sometimes be higher by 1 to 2 per cent and the excise duty is levied for the excess weight also. This is not correct since the mills have to necessarily pack excess weight in order to compensate for any loss of moisture regain. If such additional weights are not given, the customer would find the bales under weight because of the loss of moisture and ask for compensation.

Sampling Scheme suggestion by ISI, BSI and ASTM

According to the standards laid by Indian Standards Institution (IS: 171-1973), the bales or cases shall be selected at random from the lot, the number of bales chosen varying from 1 to 8 depending on the lot size. The lot shall be considered as conforming to the requirements of the specification, if the average count calculated from the test results lies within ± 3 per cent of the nominal count specified.

British Standards Institution specifies (2910-1953) that the inspection lot in a single delivery shall consist upto a maximum of 100 cases, deliveries exceeding 100 cases, shall be sub-divided into inspection lots of nearly equal size each containing not more than 100 cases. The total packages selected for test are 10 for a count C.V. upto 4, and 20 for higher C.V. one lea being tested from each package.

American Society for Testing Materials suggests (D-180) a sample size of 10 (the CV assumed is 4.5) and gives a formula for determining the sample size for higher CV. A tolerance of ± 3 per cent is allowed for yarn count.

> A single sampling scheme for conformity of the lot is given by Indian Standards Institution, whilst American Society for Testing Materials and British Standards Institution suggest a double sampling scheme."

4.22 All the Associations further wanted that the test report should be made available to them and one Trade Association at Ahmedabad asserted that if the laboratory report is not made available within a month, their declaration should be accepted. Some Associations wanted that the laboratory should give the actual count of the yarn obtained, so that if the count reported is of lower rate they should get the benefit in the matter of assessment.

4.23 The Bengal Chamber of Commerce at Calcutta has commented adversely on the administration of the laboratories. They would like to know in detail the laboratory set up, the facilities available there for various tests, so that they can be sure of what use the laboratories can be for the trade and industry. The testing methods should be known and acceptable to the trade. Some Associations pleaded that in view of the delay involved in retesting of the samples by the Chief Chemist, there should be regional Appellate Authorities for retesting the samples. They also desire that recognition should be granted to private laboratories like SASMIRA, ATIRA, ITALAB etc. so that reports can be accepted by Customs and Excise authorities. The Associations have also commented that the tests reports furnished by the Central Laboratory is ambiguously worded and suggested that the reports should be clear and precise and not lend itself to different interpretations.

4.24 There is one particular problem relating to sampling of yarn, as variations occur in the same factory or Mill between one lot and another during spinning process. The Indian Standards Institution has laid down detailed procedure for obtaining representative samples in such cases. The Departmental Chemists felt that conforming with Indian Standards Institution procedure will lead to drawal of large number of samples and more testing. The difficulty in this matter was expressed by the trade in Amritsar, and Ahmedabad particularly. The Collectors and the Chemists concerned could arrive at an acceptable solution and more frequent sampling could be allowed in spite of the increase in Departmental and laboratory work, if the trade desires it.

4.25 The Committee recommends that as a first step the test reports are devoid of ambiguity and that some procedure can be evolved to communicate the testing procedure to the Trade Associations. Elsewhere on this score we have recommended the preparation of test procedure manual (Chapter 12).

4.26 Some Collectors of Central Excise maintained that errors, the infrequency in sampling may cause, are taken care of by the tolerance prescribed by the department which is in line with the Indian Standards Institution tolerance. But the Associations' grievance appears to be that as sampling is not done in accordance with Indian Standards Institution procedure, the tolerance should be more liberal. Though a limited tolerance is recognised, going beyond the recognised trend may not be advisable. The Committee was advised that the problem of "counts" is due to the system which is based on the British practice. The Indian Standards Institution it appears, has suggested direct TEX system for yarn counts. The conversion count tables of TEX value in relation to conventional counts is given below:

YARN COUNTS

In the TEX system the fineness of yarn is assessed by the weight in grams of 1000 metres of yarn. The lower the TEX number, the finer the yarn.

To convert from present system to TEX -

Denier.	Divide the relevant denier by 9.
Worsted.	Divide 885.8 by the relevant worsted count.
Woollen.	Divide 1938 by the relevant woollen count.
Cotton.	Divide 590.5 by the relevant cotton count.
Linen.	Divide 1654 by the relevant linen count.
Metric.	Divide 1000 by the relevant metric count.

To convert from TEX to present(old) system -

Denier.	Multiply relevant Tex number by 9.
Worsted.	Divide 885.8 by relevant Tex number.
Woollen.	Divide 1938 by relevant Tex number.
Cotton.	Divide 590.5 by relevant Tex number.
Linen.	Divide 1654 by relevant Tex number.
Metric.	Divide 1000 by relevant Tex number.

Tex.	Denier	Cotton Count	Worsted Count.	Woollen Count Yorks	Linen Count	Metric.
1.	2.	3.	4.	5.	6.	7.
1.	9	590.5	885.7	1937	1653	1000
2.	18	295.2	442.8	968.5	826.5	500
3.	27	196.8	295.2	645.7	551.0	333
4.	36	147.6	221.4	484.2	413.2	250
5.	45	118.1	171.1	387.4	330.6	200
6.	54	98.4	147.6	322.8	275.5	166
7.	63	84.4	126.5	276.7	236.1	143
8	72	73.8	110.7	242.1	206.6	125
9	81	65.6	98.4	215.2	183.7	111
10	90	59.0	88.6	193.7	165.3	100
15	135	39.4	59.0	129.1	110.2	66
20	180	29.5	44.3	96.8	82.6	50
25	225	23.6	35.4	77.4	66.1	40
30	270	19.7	29.5	64.4	55.1	33
35	315	16.9	25.3	55.3	52.9	28
40	360	14.8	22.1	48.4	41.3	25
45	405	13.1	19.7	43.0	36.7	22
50	450	11.8	17.7	38.7	33.1	20
55	495	10.7	16.1	35.2	30.0	18
60	540	9.84	14.7	32.3	27.6	17
65	585	9.09	13.6	29.9	25.4	15
70	630	8.44	12.6	27.7	23.6	14
75	675	7.88	11.8	25.8	22.0	13
80	720	7.38	11.1	24.2	20.7	12
85	765	6.95	10.4	22.8	19.4	11
90	810	6.56	9.84	21.5	18.4	10
95	855	6.21	9.32	20.4	17.3	10
100	900	5.90	8.86	19.4	16.5	8
120	1080	4.92	7.38	16.1	13.8	7
140	1260	4.22	6.33	13.8	11.8	7
160	1440	3.69	5.54	12.1	10.3	6
180	1620	3.28	4.92	10.2	9.18	6
200	1800	2.95	4.42	9.68	8.25	5

If this is adopted, we are advised there may not be many complaints from the trade regarding tolerances. This is a matter which the Board might examine in consultation with the Textile Commissioner and suitably modify the textile tariff.

4.27 Some processing units complained to us about having to pay higher rate of duty at a later stage after the laboratory report is received; and that the smaller units find it hard to bear the additional revenue claimed after long lapse of time. This is purely an administrative matter, outside the scope of the Committee. All that this Committee can do is to advise that these delays should be reduced.

4.28 Some Collectors mentioned that the change in the tariff from slab system to single count yarn system has lead to more clerical work to the mills on account of more entries in RG.1 and RG.12. This however does not concern us but we mention this in passing for any remedial action that may be called for.

4.29 We have dealt extensively with sampling and testing of textile yarn in view of the importance of this industry even in the small scale sector. We advise a small study group with one or two textile technologists should go into these matter in some detail. In the meantine the sampling scheme of Indian Standards Institution should be considered for being adopted with modifications as may be considered necessary. All these make us feel that the textile tariff should be examined very carefully both in the interest of the trade, administrative convenience and laboratory procedure. The setting up of new laboratories in Amritsar, Ahmedabad and Poona may help to reduce delays but the complexity of the tariff deserves scrutiny.

SECTION - III

PROBLEMS RELATING TO ORE SAMPLING.

4.30 Detailed instructions exist for drawal of samples of Manganese Ore(Annexure IVB). This procedure has been adopted from Indian Standards specifications which prescribed the "conning method". These instructions further specifically state that it does not consider it necessary to utilise the laboratory staff for the purpose of drawal of samples of manganese ores. More or less similar situation exists for drawal of samples of iron ore. During our visit to the various ports, both the Trade representatives and Customs Officers felt that a Chemical Assistant should associated in the process of sampling. From the general principles for sampling which we have elaborately explained at the beginning of this Chapter it should be obvious that for certain types of commodities, expert guidance is necessary. The Committee, therefore, recommends that the laboratory staff may be associated in drawal of samples from bulk goods such as ores, oils, including petroleum products, tallows, paper etc. (both import and export on the Customs side). It would be desirable to associate the laboratory staff in the drawal of heavy duty goods like plastics, cables, textiles, steel, synthetic rubber, rubber chemicals, organic surface active agent and bulk chemicals - in which the percentage composition will decide the extent of duty liability, or refund of duty. We have already drawn attention to the existing inadequacies in the current procedure in some of these matters. In the Central Excise Collectorates as the factories are spread out over a vast area, there may be constraints in associating chemical staff for this work. However, the position in the Central Excise Department will improve with the proposed appointments of exports as Superintendents. Nevertheless it will be necessary to utilize the laboratory staff in many cases where it is feasible.

SECTION - IV.

DRUGS TESTING.

4.31 The E.S. Krishnamurthy Committee in its report in 1957 devoted a whole chapter to the amendment of the Drugs Act, 1940. This was perhaps done under the presumption that the bulk of the analysis under the Drugs Act would be done in the Customs' laboratories when they are expanded and it visualised the appointment of the Chief Chemist of Central Revenues Laboratories as Government analyst. As things turned out, the work relating to testing of drugs has been taken over by separate Drug Laboratories. Though this subject is not strictly governed by our terms of reference, we received several representations from the trade in the major ports and important cities that analysis of drugs by the State Government or Central Government Drug Laboratories takes time and it would be simpler to have a test under the Drugs Act also done in the Customs and Central Excise Laboratories. In view of the fact that specialised laboratories have already been established and the subject comes under a different Ministry we did not think it is necessary to go into this question. If, however, for purposes other than the determination of chemical composition (which alone is of interest from the point of the classification of either in the Customs or Excise Tariff) tests are to be undertaken, it would be necessary to install additional equipment and facilities for biological tests in the Customs and Excise Laboratories. We think it is unnecessary, unless the whole policy is changed and Customs Laboratories are declared as laboratories under the Drugs Act and the entire responsibility of administrating the Drugs Act from the point of view is transferred to Central Revenues Departments. But this is practically out of the question now, in view of the fact that the Ministry of Health may not like it and also the fact that Health is a State Subject.

CHAPTER - 5

TESTS CONDUCTED BY OUTSIDE LABORATORIES.

5.1 We included several questions in our questionnaire on this subject in view of the prevailing impression that the Customs and Excise Departments are making use of outside laboratories and also of the general clamour from the trade that test reports from reliable outside laboratories should be accepted. This of course would be convenient to manufacturers, importers and exporters; and perhaps would reduce delays and minimise complaints. The information we collected about the outside laboratories and the types of samples sent to them for test for want of facilities is given below:-

S.No.	Name of outside Laboratory.	Name of the goods.
1.	2.	3.
1.	D.G.T.D., Ahmedabad.	Rigidity test for plastic sheets.
2.	National Test House, Alipore.	-do-
3.	-do-	Steel sheets for tensile strength.
4.	-do-	Metals and alloys.
5.	-do-	Paper for sensitization.
6.	-do-	Paper, Plywood & Cement, asbestos.
7.	-do-	Rubber elongation test.
8.	Rubber Research Institute, Kottayam.	-do-
9.	M/s. Firestone Laboratory, Bombay.	-do-

1.	2.	3.
10.	M/s. Dunlop India, Hoogly.	Rubber elongation test.
11.	M/s. Bata India, 24, Parganas, Calcutta.	-do-
12.	Synthetic Organic Chemical Laboratory, Bareilly.	-do-
13.	Ahmedabad Textile Industries Association.	Canvas cloth.
14.	Drugs Laboratory, Baroda.	Seized antibiotics.
15.	Department of Chemical Technology, Matunga, Bombay.	Pesticides like Phosalone, Monocrotophos etc.
16.	SASMIRA Laboratory, Bombay.	Special types of yarns and fabrics for denier.
17.	Central Leather Research Institute, Calcutta.	Leather and leather goods.
18.	National Test House, Madras.	Capacitor and condensor paper.
19.	Central Drugs Laboratory, Calcutta.	Drugs.
20.	National Physical Laboratory, Delhi.	Ivory board for opacity.

Though actual data regarding number of samples sent to outside laboratories were not supplied, the Committee was informed during oral evidence that only few samples are sent to outside laboratories for which facilities do not exist in the Revenue Laboratories.

5.2 The Committee has proceeded on the assumption that it is the duty of the Revenue Departments to undertake all the tests necessary for revenue purposes. We, therefore, investigated the matter with some diligence in all the places we visited and wherever trade representatives met us and raised this question.

5.3 During the Committee's visit to Bombay we were informed that in view of the heavy pendency of samples in the laboratories the Drawback Department was sending textile samples to certain outside laboratories. The Deputy Collector, Drawback gave one or two instances where the results were found to be misleading. However, we were assured that the samples were sent to outside laboratories only on a few occasions, and no regular practice developed of depending on any outside laboratory. The excuse can no longer be put forward now that we have two large Departmental laboratories in Bombay.

5.4 Similarly, in Chandigarh it was learnt that export samples are being sent to certain outside laboratories in that region. The Committee fails to understand why samples for which test facilities exist in the departmental laboratory, should be sent to an outside laboratory at all. Secondly, there can always be doubt about the authenticity of the samples tested in the outside laboratory.

5.5 The Committee was also made aware that the outside laboratories do not like to get involved in Court proceedings and their officers are not prepared to testify before courts and face cross examination. Customs and Excise decisions on classification are challenged by parties in Court, and the Chemists on whose report the assessing officers rely, must be prepared to appear in Court. Further most outside laboratories charge heavily for testing, which will have to be borne by the parties. These outside laboratories have commitments of their own priorities with the result that it takes not less than 3 to 4 months to get their results.

5.6 We, therefore, feel that as far as possible outside tests should be avoided. If it is due to lack of facilities and equipment outside the laboratories are resorted to, then the departmental laboratories must be supplied with additional equipment. The Committee elsewhere has recommended suitable additional equipment for the laboratories (Chapter 14). Once the laboratories are adequately equipped, these tests can be carried out in the Revenue Laboratories. The Committee does not favour acceptance of private laboratories report straightaway by the Customs and Excise authorities, although strong pleas have been made by several Associations. The practice once conceded, will lead to abuses. The majesty of the law and the huge revenue at stake are sufficient arguments to justify expenditure on equipping Customs Excise Laboratories adequately. All that the Trade wants is expedition.

5.7 We have taken into consideration the views expressed by the Estimates Committee and the S.R.P. Review Committee. The Customs and Excise Departments are to be equipped adequately for the purpose of tests required for classification and assessment. The additional expenditures on equipment proposed is not very excessive compared with the advantages derived by having the Revenue Laboratories self-sufficient.

5.8 However as the process of equipping these laboratories will take some time, the Committee recommends that in urgent cases samples can be sent to the nearest National and Government laboratories for test in case necessary facilities are not available in the Revenue laboratories. In extreme cases of congestion, if tests reports are required urgently samples could be tested in reputed private laboratories by a departmental chemist.

CHAPTER - 6

MINI KIT FOR ON-THE-SPOT TESTING.

6.1 The terms of reference specifically direct the Committee to examine the "feasibility of identifying areas where with suitable training, the departmental field staff can themselves conduct tests which might not require elaborate equipment or experience as to warrant a reference to the laboratories."

6.2. During the visit of the Committee to various Collectorates and laboratories this point was discussed at great length. However, the general consensus among the Collectors seem to be that testing work should be carried out only by the Chemical Staff and that the field officers should not be entrusted with the testing work, however, simple it may be. They might have been influenced by several considerations some of which are enumerated here briefly:-

i) The officer drawing the sample should not also be the testing officer;

ii) The field officer may not bestow as much care either in drawing or in testing the sample, and any error in the method of drawal, packing and transport of sample that can now be checked will go undetected; and

iii) Except for measuring and weighing, all other kinds of tests should be done by experts under supervision in laboratory conditions.

6.3 Some of them however indicated that it may be possible to get some tests carried out by the field staff after suitable training. The following tests are regarded as simple enough to be carried out by field officers. These are :-

i) Specific gravity of mineral oil:

ii) Weight per sq. metre of fabrics or number of sq. metre of fabrics per unit weight or weight per sq. metre of paper;

iii) Gauge of wire;

iv) Thickness and area of plywood;

v) The measurement of width of metal flats/strips etc.

The staff can be given a set of instruments which are listed below:-

i) Screw gauge (different gauges) and dial type screw gauges;

ii) Balance (physical, two pan) with weight box;

iii) Vernier Calipers;

iv) Scale (preferably metallic) metre rod;

v) Hydrometers (for specific gravity of mineral oils);
vi) Beringer two pan balance;
vii) 1000 ml. glass cylinder; and

viii) Thermometers 0°C - 110°C and 180°F - 212°F.

6.4 Initially it was felt that as an experimental measure, these simple tests can be carried out by the field officers: Examiners in the Customs sheds and Inspectors attached to factories on the Excise side. The weighing balance could be kept in the docks or in the Central Excise premises in case of factories. The other instruments which are smaller in size can be kept in a portable box which the officer can carry from place to place.

6.5 It was envisaged that this can be tried on an experimental basis in one major port and in a few Central Excise Divisions of Collectorates which have their own laboratories. If the scheme succeeded, thereafter, it can be extended to all the Collectorates. Such tests by field officers would be subjected to surprise checks by the trained and senior laboratory staff, so as to ensure that no malpractice creeps in and that the sampling and testing are done correctly.

6.6 Even under this limited delegation, the testing officers should pass the goods on their declaration, only if the results fall well within the specifications declared. All marginal cases should be referred to the higher authorities who might order a laboratory test. The benefit of tolerance generally given in marginal cases should not be extended by the field testing officer.

6.7 The full Committee discussed this experimental measure in some detail and the consensus of opinion is against trying this measure even on an experimental basis and thought the potentialities for misuse and errors are immense. Perhaps when specialists like engineers, and chemical technologists are appointed to the Central Excise Department in the near future, there may be scope for tying this out in a larger scale. The Committee thought that we should lay before the Government its considered opinion in view of the importance attached to this question.

CHAPTER - 7

RATIONALISATION OF CUSTOMS & EXCISE TARIFFS

7.1 The New Customs Tariff came into force with effect from 2nd August, 1976. This Tariff is based on C.C.C.N. (BTN Tariff). The Central Excise Tariff in vogue has undergone many changes since the Central Excise Act was passed in 1944. The co-relation between these two tariffs becomes very necessary as the imported goods in many cases attract countervailing duties.

7.2 The Committee feels bound to point out certain instances of such anomalies as affecting laboratory procedure and tests. It may be desirable to take note of these for remedial measures.

7.3 Alcoholometry:

The import tariff specifies strength of Alcohol, in terms of Gaylussac Hydro-meter at 15°. The Central Excise Tariff specifies the proof strength which is based on the Sikes system. The Jha Committee has suggested the adoption of metric system, for determining the strength of alcohol.

7.4 Relevant Extracts:

An extract from the Report of the U.K. Government Chemist 1977 is reproduced below as illustrative of the changing trends:-

> "EEC Council Directive will oblige all member states in introducing this system and forbid the use of any other system by not later than 1st January, 1980. The Department of Prices and Consumer Protection, the authority responsible for implementation of metrilogical directives in the United Kingdom, will undertake the initial verification of the new

instruments jointly with the British Standards Institution's Test House at Hemel Hempstead. The need for subsequent checking will not be as frequent as with the Sikes instruments, which gradually lose their plated coating in use."

"The Current system of alcoholometry and the associated revenue law have evolved over a period of nearly two centuries. An EEC Council Directive requires that all alcoholometric tables are calculated in accordance with the OIML formula which gives algebraic form to the relationship between density, temperature and composition of aqueous ethanol solutions. Introduction of the OIML system requires new laboratory tables for revenue purposes: the preparation of these tables is in hand. It is the intention that they will be very similar to the existing tables as regards formate and the size of intervals but that advantage will be taken of the change to adopt tables based on density rather than on specific gravity. It is intended that the new tables will be established on an 'in-air' basis, thereby circumventing the inconvenience of making allowance for air byoyancy during routine density determinations. The currently legalised alcohol tables used in conjunction with pyknometry in laboratories are based on the work done in the laboratory prior to 1915 by Sir Edward Thorpe, the then Principal, assisted by Messrs Cheater Holmes and Tate. Their work provided the specific gravity 60°F/60°F spirit tables".

"A prime consideration leading to this change of practice was that specific gravity has always been determined in the laboratory by means of a pyknometer having a capacity of exactly 1000 grains of water at a reference temperature. Among the advantages so gained is the fact that when the empty pyknometer is first balanced against a tare and then filled with test solution, the specific gravity of the latter is numerically equal to one thousandth of the weight in grains necessary to restore equilibrium, which simplifies calculation. However, when the metrication legislation is fully effective the grain will cease to be a permitted unit of measurement

> and it was felt that if the 1000 grain system was retained, there would eventually arise difficulties associated with the procurement and maintenance of suitable balances. With the use of a 50 cm. pyknometer - the intended replacement the advantages of working in specific gravity as opposed to density will disappear."

7.5 This Committee would also suggest that the metric system should be adopted in both our tariffs in the interest of uniformity. At present, except the Central Revenues Control Laboratory, the other laboratories do not appear to have the Gay Lussac Hydro-meters, and that no legal conversion tables are available for converting the proof strength to Gay Lussac volumes. The Committee recommends that early action may be taken to adopt metric system in both the tariffs.

7.6 Mineral Oil Items:

(Customs Tariff Item No.27 and Central Excise Tariff Item Nos.6 to 11).

Primarily, the definition of Mineral Oil in the Excise Tariff is different from that adopted in the Customs Tariff. The Customs Tariff excludes chemically defined organic compounds from the scope of mineral oil items whereas the Central Excise Tariff includes in its scope, oil consisting of single liquid hydrocarbon also. The Petroleum Act of 1934 was amended a few years back and it is incongruous that the Customs Tariff still follows the earlier Petroleum Act. While the temperatures are specified in the Customs Tariff in degree centigrade, the Central Excise Tariff prescribes in degree Fahrenheit. As per the amended Petroleum Act the flashing point is determined in full degree centigrade. The Customs Tariff reads decimal degree centigrade i.e. 24.4°C etc. This is due to conversion from Fahrenheit reading to centigrade. We see no reason for such difference to continue. The provisions of the amended Petroleum Act of giving flashing points in full degree, avoiding decimals could therefore be adopted.

7.6.1 The use of the term "Bituminous Substance" in the mineral oil tariff causes difficulties in testing. Departmental laboratories do not estimate bituminous substance. They do only carbon residue content. While the Customs Tariff prescribes 'smoke point' the Central Excise Tariff prescribes "flame height". This does increase the analytical work on some of the imported mineral oil products.

7.6.2 Different specifications for the oil used for the batching of jute or other fibres are given in the Customs & Excise Tariffs.

7.6.3 Speciality products names like flushing oil, jute batching oil, wash oil etc. have figured in the tariff with no clear cut specifications.

7.6.4 We are informed that the Board is already seized of this problem and a special committee is looking into this question, of introducing uniformity between the two tariff schedules and the import trade control schedule dealing with Petroleum products. The anomalies require early rectification so that the laboratories may have clear guidelines on the tests to be applied. This is very much in the Revenue interest as well. We would like to add that I.S.I. specifications for Mineral Oil products must be adhered to as far as possible and practicable. Such correlation and adoption of uniform nomenclature are very essential.

7.7 Artificial Resins & Plastic Materials
(Customs Tariff Item No.39.01/[illegible] and
Central Excise Tariff Item No.15A, CET).

While the Customs Tariff is wide enough to cover artificial resins and plastic materials as well as silicones and other polycondensation or polymerisation products, the Central Excise tariff is specific for artificial resins and plastic material. This has caused many interpretative difficulties. One typical example is that of classification of silicones.

The Committee feels that the Customs Tariff wordings in full should be adopted in the Central Excise tariff also to avoid difficulties in interpreting these items by the laboratories.

7.8 Synthetic Rubber:
(Customs Tariff Item No.40 & Central
Excise Tariff Item No.16-AA, CET).

While the Customs Tariff defines what should be synthetic rubber, the Central Excise Tariff has no such definition. This causes problems in the interpretation of certain elastomers as also certain blends of plastics with rubber.

7.9 Textiles:
(Customs Tariff Section XI Chapters 50
to 57 and Central Excise Item No.70).

Mineral fibres of glass are treated as glass and glass-ware in the Customs Tariff but in the Central Excise Tariff these are treated as textile fibres. Similar problem arises in respect of glass fabrics i.e. articles made from glass etc. also.

7.10 Aromatic Chemicals:
(Customs Tariff Item No.11 and Central
Excise Tariff Item No.68).

The term "aromatic chemicals" in Chemistry means chemicals with benzene ring, and should only refer to organic chemicals. However, the Customs tariff has used the term to cover all organic chemicals which are used for imparting aroma. This causes confusion, and sometimes aliphatic compounds, perfumed materials, are not allowed clearance under this item, though this is not the intention of the tariff. It is suggested that the initial term "Aromatic Chemicals" may be deleted and the item may read as "organic chemicals etc. as used for imparting aroma".

7.11 In the Customs tariff an alloy is classified under "copper alloys" if the copper content predominates by weight over each of the other metals. In the Central Excise tariff these are treated as copper alloys if these contain not less than 50 per cent by weight of copper.

7.12 In the Customs tariff the term alloy is taken also to include sintered mixture of metal products and heterogenous intimate mixtures obtained by melting (other than cermets). Similar treatment should be accorded to in the Central Excise Tariff.

7.13 While the Central Excise tariff uses words like "crude form" in the tariff items dealing with metals and alloys, no such terms are used in the Customs Tariff in the corresponding items.

7.14 In the respect of Iron and Steel products the term "flat" which does not have clear cut definitions figures in the Central Excise Tariff (this term does not figure in the Customs Tariff) .

In the past there has been dispute regarding the definition of the words "skelp" and the department is well aware of the difficulties that has arisen for want of clear-cut definition of the term "skelp"; which are too well known to need any repetition. Such non-precise terms like "Flat" should be better avoided in the tariff. While the Customs tariff has prescribed specifications in the various physical forms such as wires, bars and rods, steel plates etc. no such criteria exists in the Central Excise Tariff.

7.15 The Committee is informed that already an inter-Ministerial Committee is doing the exercise of rationalising Central Excise tariff with the Customs Tariff relating to Iron and Steel products. It is hoped that this Committee will try to remove all the ambiguities which are irritant to the trade.

7.16 Prepared or Preserved Foods:

The term "unit containers" figuring in item 1B Central Excise tariff need to be defined in the item itself by way of explanation. The Government should make it clear whether it is their intention to tax specified goods in bulk packing also. The packing industry has undergone many changes since the tariff item was introduced.

7.17 Organic Surface Active Agents:

The dispute in this item arises on account of technical aspect i.e. whether the item can cover organic surface active agents which are insoluble in water. This controversy appears to exist in the Chemists Committee of Customs Co-operative Council (B.T.N.) as well. The Committee feels, these questions can be resolved only by participating in these international forums. The predominant view appears to be that only water soluble surface active agents can come under this item.

7.18 Impregnated, coated or laminated fabrics: 19 III CET, 22(3) CET and 22B CET :-

One such instance has been given in the Annexure (IIC). The Committee feels that there should be uniform interpretation in both the Central Excise and Customs Tariffs. The legal notes 2(a), (b) and (c) under Chapter 59 C.T.A. could be suitably incorporated in the above referred Central Excise Tariff items.

7.19 Acrylic Bulked Yarn:

In case of imported acrylic bulked yarn, dispute arises for countervailing duty purposes on the issue whether the imported bulked yarn is obtained from the base yarn or not. When one goes through the structure of the tariff, it is seen, that this type of bulked yarn which is non-cellulosic bulked yarn could have been placed under item 18B Central Excise Tariff woollen and acrylic spun yarn or 18E non-cellulosic spun yarn and it could have been excluded from the scope of textured yarn under 18(II) Central Excise Tariff. However, the Committee is informed that these goods have been exempted.

7.20 All the other anomalies mentioned here would need further examination so that similarity may be brought about in the wordings of common or similar items in both the tariffs.

CHAPTER - 8

THE ROLE OF TESTING IN THE SETTLEMENT OF DRAWBACK CLAIMS.

8.1 Customs

Sections 74 to 76 of the Customs Act, 1962 deal with issues relating to Drawback. Section 74 sub-items (2) and (3) empowers the Central Government and the Board to issue notifications in respect of used goods and to frame regulations respectively. The Board has issued, from time to time, detailed schedules for various commodities specifying the admissible rates. The rates are worked out on the following basis:

a) Weight;
b) Value;
c) Area;
d) Electrical data; and
e) Quantity, either in number or length.

8.2 Central Excise

By virtue of the powers vested under Rule 9 of the Central Excise Rules, procedure for grant of rebate of excise duty has also been laid down by the Board. The detailed provisions are contained in the Customs and Central Excise Duties Drawback Rules, and schedules are issued from time to time fixing the rates and quantum of drawback on goods exported:-

a) Manufactured out of imported goods;
b) or in admixture with indigenously produced excisable goods;
c) or goods which had paid excise duties only.

Under the existing system, an exported goods manufactured in India, using imported material and indigenously produced material in varying parts, it is possible to obtain refund both of Customs duty and Central Excise in varying proportions according to the composition of the goods manufactured for export. This is a great facility for the trade, but in fixing the quantum of drawback, various complications arise. The Drawback Directorate has issued detailed procedures for calculation on the quantum of Drawback on various commodities thus manufactured for export.

8.3 As the Bombay port handles a substantial volume of export trade, involving grant of drawback, the question was discussed at length with the concerned officials in Bombay and with an officer of the Drawback Directorate.

8.4 The complexities involved are summarised below:-

a) Ascertaining the percentage of the different components of the finished products on the basis of which the rate of drawback have to be fixed. For example, fruit preserved and fruit preparations, provisions etc., different rates of drawback have been fixed on the basis of the sugar contents in the goods.

b) Some goods in the manufacture of which plastics and some chemical substances are used pose more complexities. Plastics is a generic term and to determine the nature of plastic used, it is necessary to find out whether it is made out of acetate moulding powder or cellulose butyrate or cellulose nitrate, polystyrene etc. by tests. Similarly, to ascertain the nature type of chemicals, the samples have to be subjected to varying kinds of tests.

c) Goods of the textile industry pose different types of complexity. Testing is necessary to determine the nature of the yarn used in different stages of manufacture whether man-made fibre, or natural fibre, cotton yarn, woollen or mixed, filament etc. Determination of counts and deniers, become necessary. Goods exported are often mixed fancy goods involving varying constituents in different proportions. Such consignments are individually small but numerous over a year.

A list of rates based on percentage of contents, is given in Annexure VIII-A. The number of items is about 40, but the number of consignments in a year run into several thousands. Many are sent by air freight and tests have to be expedited.

8.5 As this Committee is concerned only with the Sampling and testing procedure, we would suggest the following general guidelines:-

a) Where the Drawback rate is uniform for the Sub-Sr. Number and is not related to any material composition, normally samples need not be tested. For example -

i) Aggarbatti,
ii) Corrugated Board Boxes,
iii) Flat Files,
iv) Paper Cones etc.

b) Where either the Drawback rate itself is based on material composition or where though the rate is on Free on Board value, there are different slabs of rates depending upon material compositions, normally a sample is to be drawn for test for each consignment, and mere declaration of the composition should not be accepted.

To illustrate the types of goods which require to be tested, we give below two items:-

1. Under Sub-Sr. No.1918(a) and (b) distinction has to be made between rigid and

flexible P.V.C. to fix the correct drawback rate.

2. But in case of Beta Ionone, through the rate adopted could be a flat rate under Sub-Sr.No.1205, sample is required to check the composition to ascertain whether it is "pure and potent" enough for use as a drug intermediate.

8.6 The following are the most complicated cases encountered in the administration of Drawback rules:

i) P.V.C. conduit pipes and articles falling under sub-Sr.No.1919(a) or 1919(b) attract higher or lower rates viz. Rs.154/- per quintal or Rs.248/- per quintal depending on their rigidity/flexibility. If this distinction continued, the necessary equipment for testing rigidity should be installed in our major laboratories. The equipment necessary for the rigidity test under ASTM-D-747 Standard is at present available only with the National Test House, Alipore. Calcutta Laboratory has this equipment, except for some accessories the purchase of which is being recommended. (Chapter 14). As the problem is most acute in Bombay, priority should be given to acquire this equipment for the Bombay Customs Laboratory immediately. Thereafter the question of equipping the other major laboratories may be taken up.

ii) BETA IONONE i.e. Lemon grass oil requires testing for its (a) purity and (b) potency to determine whether it is usable as drugs intermediate (for manufacture of Vitamins A) and hence attracting drawback under Sub-Sr. No.1205 or it is merely to be used in perfumery attracting drawback under Sub-Sr. No.1123(Chemicals). The difference in drawback rate is between 5 per cent and 3 per cent F.O.B. value.

One of the scientific members of this Committee pointed out that an equipment viz. Spectrophoto-meter should be bought by the Bombay Custom House Laboratory to determine this. Though a costly and sophisticated instrument, it would be also immensely helpful in the analysis of other basic drugs and chemicals. The bulk of imports/exports being from Bombay, the equipment may be installed at Bombay Customs Laboratory; the other departmental Sub-Regional laboratories in that Zone could also forward such samples to Bombay for analysis. This is mentioned separately in our recommendations on additional equipment for laboratories (Chapter 14).

8.7 Textile Samples:- Bombay.

While some of the textile samples are tested by the Bombay Custom House Laboratory, others are being tested by few outside laboratories as the Custom House Laboratory cannot handle the workload involved - (i) Art Silk Fabrics (ii) Crimped Yarn (iii) Art Silk Embroidery thread (iv) Woollen fabrics (v) Woollen Hosiery and (vi) Woollen shoddy blanket are sent to the Textile Committee Laboratory. Powerloom and Cotton fabrics are sent to Sasmira Laboratory.

It is desirable to get these tests also conducted in the departmental laboratory. It is said that these samples amount to about 1300 per month and the laboratory cannot handle this number unless an additional staff of 20 chemists and additional laboratory space are made available. Actually, about 100 of these textile samples alone come to the Customs Laboratory. It has been ascertained that about 1200 samples are sent to outside laboratories for test; of these 700 samples are drawn by the Textile Committee staff - (not by competent Customs officers) - from the Mill itself before packaging for shipment. The exporter has to pay a fee of Rs.250/- per sample. The question has to be gone into in detail as this is a matter in which large drawback payments are involved. Adequate sampling is not obviously being done. The desirability of continuing the practice of accepting certificates produced by exporters based on samples needs an urgent review as large amount of money is dispensed by way of Drawback.

8.8 Cables : Defective Method of Sampling.

It was mentioned that the Customs staff in the docks in some cases do not possess either the technical knowhow or the equipment to enable them to draw samples accurately. One example of crude drawal of samples was with reference to A.C.S.R. and PILC Cables, where the samples were normally broken with hammer and chisel, resulting in bad cuts and loss of conducting material, both while drawing the samples and later in transit to the laboratory, giving rise to complaints from the trade.

We have already suggested that for items requiring technical skill in sampling, a chemist from the departmental laboratory (with suitable implements) should be assigned to the Docks for this work.

8.9 Presentation Articles.

During our discussions on Drawback problems in the Bombay Customs House in September, 1978, in which an officer of the Drawback Directorate also participated, the Deputy Chief Chemist, Bombay pointed out practical difficulties and avoidable work load, involved in testing component articles generally exported as presentation articles/souveniers e.g. calendars, desk diaries etc. These articles, are made mainly of paper, but supplemented by paper board, foam leather or plastic and perhaps a few metallic parts. Dismemberment of such articles and determination of weight etc. of each constituent for every drawback consignment should be avoided as these are laborious and time consuming processes. Individual consignments are generally small; but during the season there may be many such small shipments. The Drawback Directorate should try to avoid fixation of rates of this nature and instead, the average values of the constituents should be taken as the criterion. This recommendation is restricted to articles which are sent free of cost and not to trade goods in large quantity. The Committee is glad to know that the Drawback Directorate has already taken necessary corrective action on this, after our earlier discussion in Bombay.

8.10 Suitcases etc.

Articles like suitcases, Brief cases, Vanity cases etc, are also presently tested for components like leather, asbestos, P.V.C. aluminium ribbings etc. Here again, it would be more practical if a flat rate could be prescribed based on average value of main components/materials.

8.11 Different samples may have to be drawn even of the same type of goods, if different sizes are involved, for example, plastic buckets with metallic handles. Here the percentage of the components will vary depending on the length and thickness of the handle. Here also flat rates are preferable.

8.12 We have gone into this question in some detail because (a) of the very large number of drawback samples handled in each major laboratory and particularly in

Bombay; and (b) of the complexity of the components of some of the articles, and the varying calculations for determining the quantum of drawback.

8.13 Our main recommendations are:-

1. The procedure for calculation of quantum of drawback should be simplified and constantly revised;
2. When the difference in the quantum of Drawback depending on the main components or use is not very significant from the revenue point of view, a flat rate could be adopted.
3. When the export is small as in the case of fancy goods, presentation articles etc. tests can be avoided, if flat rates are fixed without reference to the percentage of contents.
4. Drawal of complicated drawback samples should be handled by a Chemist (Cables etc.).
5. Avoidance of referring samples to Alipore Test House or outside laboratories to be ensured by additional equipment and staff in the departmental laboratories.
6. As the bulk of drawback shipments takes place from Bombay, if it is decided that all tests (particularly on textiles) should be done in the departmental laboratory, adequate staff should be sanctioned as a temporary measure and the position reviewed every year.

CHAPTER - 9

DEPARTMENTAL LABORATORIES IN REFINERIES

SECTION - I

General study and crude testing etc.

9.1 There are at present ten Refineries in operation and the two other Refineries at Mathura and Bongaigaon will go on stream in a short time. It is reported Bongaigaon has gone into stream in April-May, 1979. The Committee visited all the Refineries except those at Bongaigaon and Haldia (Annexure IX A).

9.2 The following Table-I shows the location of Petroleum Refineries in India, their size, location of the Departmental Laboratory and the facilities available. Table-II indicates the realisation of Customs and Excise duties from crude and Petroleum Products (in crores) for the two years 1977-79. In view of the immense potential for Revenue, it is imperative to have a careful look into the laboratory arrangements for testing of the Refinery products and other scientific and technical controls. The nationalisation of most of the Refineries is an aspect relevant to the examination of this matter.

TABLE - I

Sl. No.	Name of Refinery and location.	Total Quantity of crude used, indigenous or imported, in million tons.	Whether a Departmental Laboratory is located in the Refinery.	No. of chemists employed	If not, the nearest Departmental laboratory where samples are sent.
1.	2.	3.	4.	5.	6.
1.	I.O.C.Refinery, Barauni.	2.80	Yes	1	--
.	Haldia Refinery	2.00	No	-	Calcutta Custom House Laborator

1.	2.	3.	4.	5.	6.
3.	CORIL, Visakhapatnam	1.25	Yes	2	--
4.	HPCL, Trombay, Bombay	2.75	*Yes	2	--
5.	Bharat Refinery, Trombay, Bombay	3.75	--	-	Central Excise Laboratory, HPCL, Bombay.
6.	Gujarat Refinery Jawaharnagar, Baroda.	4.00	No	-	Central Excise Laboratory, Baroda.
7.	Cochin Refineries Ltd., (CRL) Ambalamugal.	2.40	No	-	Custom House Laboratory, Cochin.
8.	Madras Refineries Ltd., (MRL) Madras	2.60	No	-	Custom House Laboratory, Madras.
9.	A.O.C., Digboi	0.53	Yes	2	--
10.	I.O.C., Noonmati, Gauhati.	0.80	No	-	Central Excise Laboratory, A.O.C. Refinery, Digboi.
**11.	Bongaigaon Refinery	1.00 (Capacity)	No	-	--
**12.	Mathura Refinery project, Mathura.	6.00 (Capacity)	No	-	--

* Serves Bharat Refinery also.

** not gone into stream.

TABLE - II

REALISATION OF EXCISE & CUSTOMS DUTIES FROM CRUDE AND PETROLEUM PRODUCTS

Sl. No.	Products.	Rs. Crores	
		1977-78 (R.E.)	1978-79 (B.E.)
1.	2.	3.	4.
	A-EXCISE DUTIES :		
1.	Mogas	435	440
2.	Kerosene Oil	166	170
3.	Refined Diesel Oils & Vaporising Oil.	335	346
4.	Diesel (Oil) N.O.S.	25	22
5.	Furnace Oil	46	45
6.	Asphalt/Tar	14	14
7.	Petroleum Products (Others)	85	128
8.	Blended or Compounded Lubes and Greases	52	54
9.	Calcined Pet Coke	2	3
	TOTAL EXCISE DUTIES:	1160	1222
	B-CUSTOMS DUTIES :		
1.	Petroleum Crude	14	14
2.	Mogas	11	12
3.	Kerosene Oil	52	51
4.	Batching Lubricating & other Mineral Oil	14	14
5.	High Speed diesel and Vaporising Oil	25	25
6.	Industrial Fuel Oil	7	9
	TOTAL CUSTOMS DUTIES:	123	125
	GRAND TOTAL :	1283	1347

(Extracts from Economics and Statistics Division, Ministry of Petroleum, Chemicals & Fertilizers, Department of Petroleum, Govt. of India, New Delhi).

9.3 Procedure for imported crude and the nature of Customs Control :

The Customs issues to the oil companies certificates within two weeks of the arrival of the vessel, giving the provisional assessment of the quantity of crude imported by each tanker on each voyage. Thereafter the responsibility is transferred to the Central Excise Department as all the Refineries are treated as "bonded".

The Central Excise Officer takes dip measurements from the storage tanks after discharge from the ship and an out-turn report is prepared and sent to the Custom House. This forms the basis for landing certificate to the oil company and remittence of foreign exchange. This procedure was originally formulated for only three Refineries which were then known as:-

1. ESSO Refinery, Bombay.
2. Burmah Shell Refinery, Bombay; and
3. CORIL Refinery, Vishakhapatnam.

Crude imported by these three Refineries was tested in the Central Revenues Laboratories situated in the Refinery premises for certain specifications (API gravity, distillation and Sulphur content) which were fixed by the Petroleum Ministry.

9.4 While there appears to be a set procedure for these three Refineries, the other Refineries like Madras Refineries Ltd., Cochin Refineries Ltd., and Gujarat Refinery do not have any prescribed procedure. Now that the Haldia Refinery has gone into stream and it is also using imported crude, the system should be extended to all the Refineries using imported crude

9.5 The Committee posed the question to the two Refineries in the Bombay Collectorate, whether it is necessary to draw samples of crude for the same consignment twice, i.e. one from the oil tanker and then again from the storage tank for test purposes. It was pointed out that the Customs sample is taken only to identify the goods, and the quality is determined and the dips taken only at the receiving end, namely the storage tanks. It was also suggested that as the oils have to be pumped in pipes running sometimes about 20 miles, it is proper that the gauging and the quality testing should be done only after the crude has reached the Refinery. Though the Refineries have pleaded for dispensing with the testing of the ship samples and drawal of samples only from the storage tanks, yet in view of the statutory responsibility of the Customs Department to ensure that the goods imported are /assessed correctly it will not be desirable to dispense with the testing of crude for customs purposes. Secondly, it is necessary to follow uniform policy in the matter of testing imported crude for all the Refineries. It will be in the national interest to know as to what types of crudes are being imported by the Refineries. It is true that the Refineries using imported crude now are all public undertakings. The Refinery authorities advised us that in their own laboratories they do not do all these tests for the crude specified in the Petroleum Ministry specification; but they do only sediment test and other tests necessary prior to processing the crude.

9.6 The Committee recommend that the Board in consultation with Petroleum Ministry should consider laying down a uniform policy for testing of all imported crude. The Petroleum Ministry should regularly and

/as per manifest and to see that the goods imported are promptly supply all the specifications of imported crude so that the Refinery Central Excise Laboratories can test against these specifications.

9.7 CENTRAL EXCISE - DRAWAL OF SAMPLES

The Central Excise control over the Refinery consists of:-

i) Technical control;
ii) Physical control; and
iii) Accounts control.

(i) Technical Control

Mineral oil products chargeable to Central Excise duty are covered by Central Excise Tariff Items 6-11. At present the technical control is restricted to the testing of the final products so as to ensure that higher rated product is not cleared as a lower rated one. Accordingly, sample of each finished product is tested once every month except for motor spirit and liquid petroleum gas, for which samples are not drawn as they pay the highest rate of duty. Samples are also drawn by surprise once in three months and tested in the laboratory according to the Board's instructions issued in December, 1977 on the above subject. This presumably was intended as a counter check on the routine monthly tests. However, there is no uniformity of practice; instead of monthly tests surprise tests are done in some Refineries. In addition to this the quarterly returns in form R.T.5 showing the quantity of crude received in the quarter and the quantity of finished product manufactured during the quarter is scrutinised by the Chemical Examiner.

(ii) Physical Control

As the Refineries are under Record Based Control there is no physical control on clearances, but the receipt of crude in the Refinery tankers is done under the physical supervision of the Central Excise officers as per instructions laid out by the Board in August, 1970. The quantity received into the tanks is ascertained by taking the opening and closing dips and three samples of crude are also drawn for testing its quality at this stage. But this practice of testing for quality of imported crude as already stated is not followed in every Refinery.

(iii) Accounts Control

It is the responsibility of the Superintendent/ Inspector posted to the Refinery to verify the correctness of the figures in the various records maintained by the factory. The accounting system ensures that no goods manufactured in the Refinery leave without payment of duty. The Refineries are required to submit daily returns of all types of oil manufactured in the factory in the prescribed form. This form gives details of all transactions which take place in the Refinery. The Refinery maintains crude register for receipt, issues and balance. For maintenance of these records normally the dips of the tanks are taken daily. The Refinery has to give prior intimation when the oil in storage tank is to be reprocessed. The storage tanks to be operated for this purpose are gauged before and after the removal for reprocessing to arrive at the quantity removed for reprocessing. The receiving tank is also gauged before and after receipt of the oil from the plant. Reprocessing includes any process which involves mixing of oils in storage tanks where the crude is charged, or with the fresh receipt from the plant. Gauging of the storage tank is done when there is a receipt from the plant for reprocessing and clearance. For this purpose of assessment and checking of accounts, it is necessary to calculate the quantity which is either cleared or in stock every day. This is done by dipping tanks and calculating the volume at 15°C. Detailed instructions exist for gauging of oil.

The Record Based Control lays more emphasis on records and accounts maintained by the Refinery. It is of paramount importance that there is proper correlation between raw material used (crude) and the various manufactured products. This is very necessary in the interest of control and for estimating the efficiency of the processes involved. At present technical control consists in testing of samples of mineral oil products as per Board's instructions of December, 1977 on the above subject.

9.8 Drawal of Samples of Imported Crude from Storage Tanks.

The samples are normally drawn from top, middle and bottom of the tank and mixed and three composite samples are prepared. One sealed sample is sent to the Central Excise Laboratory, the second handed over to the Refinery and third kept with the Assistant Collector or Superintendent of Central Excise in charge. It is seen from the replies received from the Collectorates that the samples are drawn in the following manner:-

i) Crude samples are drawn for each type of crude from the tanks as is done by the Customs Officers.

ii) Crude samples from each consigament stored in different tanks in the Refinery are drawn by the Central Excise field staff and the composite samples are prepared and sent for test.

9.9 Drawal of Samples in the Refineries.

The indigenous crude coming in pipeline is stored in separate storage tanks. No samples of indigenous crude are drawn for test purposes by the Excise Department. As regards the other Refinery products, the storage tank is first filled up and allowed to settle, then the tank temperature is taken and the samples are taken from top, middle and bottom, and mixed up and three composite samples are prepared in bottles or cans of one litre capacity. The drawal of samples is always done in the presence of the Refinery representative. Out of these three sealed bottles/cans, one bottle/can is handed over to Refinery, the other is kept in the Central Excise office, and the third is forwarded to the Central Excise Laboratory for test. The practice is similar to what is done for imported crude.

9.10 Presence of a Chemist for Drawal of Samples.

All the Refineries follow a well recognised system of drawal of samples even for their own laboratory tests. This is substantially similar to the practice adopted by the Customs and Excise Departments. Only the frequency of sampling differs. In all these drawal of samples, it is noticed that the Departmental laboratory staff are not being associated. In view of the nature of the commodity and Revenue implications, it is desirable to have the Departmental chemist associated for drawal of samples of fuel oils, Diesel oils, High Speed Diesel oil, Jute batching oil, Lubricating oils, Vaporising oil etc.

9.11 We set up study groups in important centres consisting of representatives of the Customs and Excise, the Refinery, and the Marketing agencies to study the system from all angles, from import to final distribution. From all these study reports one thing is clear-routine testing of samples as at present has not led to any improvement in scientific control. Testing of crude and occasional testing of a few products at the production stage purely for identification in terms of tariff description are not adequate. The mere fact that most of the Refineries are public undertakings should not lead to complacency.

9.11.1 It is, therefore, suggested that samples may be drawn from all the products by surprise and the periodicity of sampling should be reviewed. To start with, the samples must be taken by surprise by Central Excise officers in association with chemical staff in the presence of the Refinery representatives, once a fortnight from final clearance tanks according to the standard procedure described above, in triplicate.

9.12 Even during our first visit to a Refinery(Bombay), the Committee felt that Scientific control should not be confined to the production stage and as petroleum products are sent in bond to the distribution and consuming centres, a check at these final stages may be desirable. . This problem was posed to all the Refineries and Collectorates in-charge of Refineries and to other Collectorates where main distribution bonded tanks are located in a note on the following lines:-

> "At the time of import, crude from the tanker is tested to satisfy the requirements of the Petroleum Ministry. Here also there is no uniform practice for all the Refineries. Therefore, the crude goes to the manufacturing processes and the manufacturing companies do the tests and wherever there is a Customs and Excise Laboratory, the Departmental Laboratory also does a few tests. After the various petroleum products are manufactured, they are stored in the manufacturer's tanks. From there they are pumped into the bonded tanks belonging to the

distributors - in most cases the Indian Oil Corporation. From these second set of tanks, the oil or any other petroleum product is pumped into a third set of tanks within the city or near about the city through pipelines. Clearance for consumption is given from these third set of tanks in metropolitan areas. In other cases, for distribution in internal sectors, the various products are transported in road tankers or railway wagon tankers in bond and these are again pumped into storage tanks belonging to the distributors without any test being carried out at any stage and without any physical control over these transports. In the internal sectors like Hyderabad, Bangalore etc. deliveries are given to consumers from the tanks of the Licensee following the routine clearance procedure, and after collection of duty through current account. Petroleum or Kerosene of different Refineries are received into these tanks as necessity arises, though there may be no deliberate intention of mixing them. It is theoretically possible that, flame height, flashing point, viscosity, temperature, and bituminous substance may change with time, or due to an unintentional mixing in transit as the same tanker or same pipeline is used for transferring more than one product. The question theoretically arises whether all the tests which are done at the manufacturing stage should not also be done just prior to clearance on payment of Central Excise duty.

It is also possible that the quantity cleared paying duty may vary even beyond the permissible limit of tolerance. There is no procedure to check up the quantitative difference, owing to evaporation in pipeline etc.

As regards gauging the mineral oil pumped from and to oil tanks through pipes, question arises whether it is better to follow conventional dip system of measurement or flowmeters can be installed".

9.13 We obtained responses from the Collectors concerned; most of them stated that duty loss by occasional mixing of small quantities in transit or in final bond may only be negligible, and that dips or measurement taken from bonded tanks at the time of clearance on duty should suffice. Some minor mixing of different products is unavoidable, and perhaps an occasional sampling for test may be desirable at the consumer end. A senior officer of the Department however mentioned to us a case of levying additional duty and penalty, because of the excess quantity determined at the clearance stage due to wrong reading of the temperature.

9.14 Though Collectors are inclined to treat this matter as a purely administrative problem, the Committee feels a case exists for scientific control also at the distribution end. The Committee therefore recommends that a departmental chemist should be associated with sampling and gauging work to the extent possible, now that we will have laboratories and chemists in more Collectorates.

9.15 Regarding the other two points of transit loss and use of flow meters we elicited the opinion of the Refineries and Collectors. Only one Refinery is in favour of flow meter which is an expensive equipment. Others see no great advantage and favour the dip system. We have no reasons to suggest any radical change. Regarding transit loss, no serious study has been undertaken. Collectors may be advised to keep proper statistics for a couple of years and till then the present practice may continue.

SECTION - II

9.16 LABORATORIES AND EQUIPMENT

There are only four Departmental Laboratories manned by Departmental chemists in the Refineries. Samples from other Refineries are tested in the nearest Collectorate laboratory. Even when the Customs and Central Excise Departments have small laboratories attached to the Refineries, these laboratories are dependent on the Refinery's control laboratory for some equipment or the other and are freely allowed to make use of them. Digboi laboratory is using distillation apparatus, Pour-Point apparatus and double pan analytical balance belonging to the Assam Oil Company Refinery Laboratory; Barauni Departmental laboratory is entirely dependent on the Indian Oil Corporation Refinery for all its apparatus.

9.17 The present dependence on the Refineries should be avoided specially as the equipment of a laboratory attached to a Refinery is not likely to cost very much more than Rs.15,000/-. We are suggesting in the annexure IX B equipment needed by each Refinery Departmental laboratory and the purpose which each apparatus serves. However, for testing of motor spirit for its quality or diesel oil for its industrial use, Departmental laboratories would have to use the facilities in the Refineries only if occasion arises. When all the major Departmental laboratories and those located in the Refineries are adequately equipped the problem will be simplified.

9.18 Almost all the exemption notifications on petroleum speciality products figuring in the Tariff mention the "Trade Name" of the commodity as coined by the respective manufacturers without the Department laying down any specifications. The laboratory test on such speciality products (Annexure IX C) therefore is confined only to check whether a particular product satisfies the requirement of the respective tariff item under which it falls. No specifications have been prescribed for products like Bauxite Solvent, jute batching oil, Iomex (IOC), Aromex (AOC), Wash oil 'B', wash oil 'C', BOC Grade Lubes, Flushing oil, House-hold oil, TOBS, TOPS, Carbon black Feed Stock (CBFS), Well Dewaxing Mixture (WDM), CBF Phenol-extract etc., which find mention in various Exemption Notifications issued from time to time. Now these speciality products are figuring in the tariff - heads itself, E.G. Flushing Oil, Jute batching Oil, Spindle oil, Axle oil, etc. The existing practice, therefore, is to report the Flashing point, Pour Point, Flame Height, Bituminous matter content, Red Wood (I) Viscosity at 100°F and Density of such speciality oils. As the specification of these kinds of oils have not been laid down by the Ministry the list of various other equipment necessary for testing these could not be prescribed. Ordinarily, Commercial or Proprietary terms which are used for what are known as speciality products are misleading unless their specifications are clearly laid out. The speciality names based on use are not reliable for test purposes, as the use can be changed after clearance by some blending or mixture beyond excise control. The Refineries have certain product specifications which do not clearly demarcate one product from the other. Hence it becomes necessary for the chemists to suggest the correct classification under the Customs or Excise Tariff to the assessing officer.

9.13.1 Even if the Departmental Laboratories are to use the Refineries apparatus for testing the speciality products which figure in the exemption notifications even then also the end-use of products such as rubber processing oil, carbon black feed-back, glass moulding oil, etc. cannot be verified by the laboratory tests.

9.18.2 It is a matter for decision by the Government whether these speciality products should be classified as they are now under one or the other of the major or minor heads of the Tariff, without further testing for the end-use. Testing for end-use may be difficult and even then there is no guarantee against diversion for uses other than declared after removal.

IMPORTANCE OF DENSITY DETERMINATION

9.19 In order to estimate correctly the quantity of Petroleum products manufactured, density and temperature are important factors. These are also relevant when such products are imported. The practice of ascertaining density has been given up with the introduction of Self Removal Procedure system of control. We have already referred to a case where owing to difference in temperature the quantity liable to duty had varied and this lead to imposition of penalty. The committee have also been informed that there are more than one such case in the past also. In view of this, the suggestions made by the Study group set up by the Collector of Customs and Central Excise, Cochin that standard density may be fixed for every one of the petroleum product does not appear feasible.

9.20 The Collector of Central Excise, Baroda had suggested that the standard temperature of 29.3°C should be adopted instead of 15°C. Other experts are also of opinion that 15°C is unsuitable for tropical countries. We understand that Indian Standards Institution has taken cognisance of this problem and their decision when published may be adopted. Regarding density, the instruments used should be checked by competent authority and both the

Refinery and the Departmental Laboratory should use similar instruments properly checked so that chances of difference in density may be avoided.

9.21 Rationalisation of Mineral oil products in the Tariff has already been dealt in the Chapter-7.

SECTION - III

SUGGESTION FOR TAXATION OF CRUDE INSTEAD OF REFINERY PRODUCTS

9.22 We mentioned earlier that at the request of the committee, study groups were set up in the Collectorates with Refineries to make an indepth study of all the problems relating to Refinery control, one of the interesting observations made to the study group at Madras was that the levy of Central Excise duty should be on the crude instead of on the distillates of crude. The study group was advised that this point of view was examined by the Government in the past, but was not seriously pursued because of inherent defects in taxing the raw materials in place of the finished products according to their different uses. The Madras study group observed that "the simplification is still feasible and at any rate requires to be examined afresh without being brushed aside too lightly in the light of analogy of other suggestions of a similar nature like those in regard to steel ingot. This is because refining and marketing of this particular commodity is by and large in the hands of Governmental agencies and the prices of these products are actually fixed by the Oil Pricing Committee of the Ministry of Petroleum. Therefore, the differentiating duty burden for different end products is a thing which can still be taken care of. We suggest Government to consider examining the feasibility of such a proposal".

9.23 The full text of the Madras note was communicated to other concerned Collectorates for their views. Though many of them thought that the simplification is attractive, they felt it needs examination at the highest level by the Finance and Petroleum Ministries.

Critical Study of the Suggestions to tax Crude.

9.24 The Collector of Central Excise, Baroda examined this suggestion in consultation with the Management of the Gujarat Refinery and gave us a very exhaustive report - extracts from which are reproduced in Annexure-IX D.

The Committee's views on the Suggestion.

We started this investigation primarily with a view to simplify laboratory tests, and the discussion between the various Collectorates and Refineries led to this matter assuming dimensions we did not anticipate. However, we feel that the discussion was not futile and is within the scope of this Committee.

9.25 Though the present method of levying duty at varying rates has the advantage of distributing the burden of taxation according to the capacity of the different users, this Committee feels that the matter deserves to be examined afresh by the policy making authorities in the interest of simplicity of taxation, and relaxing un-necessary administrative restraints. Any simplification will however take away the tax varying power from the Finance Ministry and the pricing of products according to use will be done by means other than fiscal. Taxing policy will lose its very important tool of varying rates according to the capacity to bear and the requirements of the Government Exchequer. Even if such simplification is conceded for the Petroleum Industry, we apprehend similar requests from public sector and other monolithic undertakings for taxing the raw material instead of the different products of the industry will be difficult to resist. This is not a proposition any Finance Ministry will relish. We are, however, bringing this matter to the notice of the Government.

Staffing of Refinery Laboratories and additional Laboratories

9.26 Each Departmental Refinery laboratory tests about 300 samples a year. If speciality products are more regularly tested, and if samples from distribution end are also to be tested, the work load will be higher, by about 100 to 200 more samples. We have also suggested associating chemists for drawal of samples. The Departmental chemist by closer association with the Refinery Control Laboratory chemists should be encouraged to develop expertise in the field of Petroleum Chemistry. Such expertise will be helpful to the service and the Ministry. The Committee does not favour the posting of a senior chemist only to supervise testing work as it will create administrative difficulties. Taking all these into consideration the Committee recommends that all the existing Central Excise Laboratories in the Refinery premises should be continued, and for those Refineries which are not situated close to the Central Excise/Customs Laboratories, provision should be made for opening new laboratories.

9.27 On this principle we suggest setting up of a small additional Excise Laboratories at the following Refineries also.

1. Haldia Refinery, Haldia.
2. Mathura Refinery, Mathura (when it goes into stream).
3. Indian Oil Corporation Refinery, Noonmati and Bongaigaon, to be situated at Gauhati.

The staff complement for each unit will be one each of scientific officer, technical assistant, stenographer and sepoy. When a laboratory deals with more than one Refinery, a post of analyst be given instead of Technical Assistant.

CHAPTER - 10

CENTRAL REVENUES CONTROL LABORATORY AT HEADQUARTERS.

10.1 The Control Laboratory, as constituted at present, has three wings namely:-

(a) Customs/Appellate Wing.
(b) Central Excise, and
(c) Opium.

The total chemical staff (excluding auxiliary staff) employed is as given below. There are 48 chemists besides the Chief Chemist.

1.	Chief Chemist, Central Revenues	- 1
2.	Deputy Chief Chemist.	- 1
3.	Chemical Examiner, Grade-I	- 3
4.	Chemical Examiner, Grade-II	- 2
5.	Assistant Chemical Examiner	- 15
6.	Chemical Assistant Grade-I	- 15
7.	Chemical Assistant Grade-II	- 12

We are dealing with the three wings separately.

Section - I.

A. Customs/Appellate Wing.

10.2 The chemical staff in this Wing comprises of -

Chemical Examiner, Grade-I	- 2
Assistant Chemical Examiner	- 3
Chemical Assistant, Grade I	- 3
Chemical Assistant Grade II	- 2

i.e. a total of 10 Chemists.

The number of samples from land Customs/seizure, opinion/retest/customs and the technical references handled by this wing during the last three years is as follows:-

Year	Land Customs/ Seizure.	Opinion/Retest/ Customs.	Technical references from the Board on classification problems.
1976-77	272	491	251
1977-78	411	508	246
1978-79	515	403	280

10.3 Customs/Appellate Section receives for retest, samples from all over the country which cover cases that have been either contested by the party/manufacturer or referred by the Department itself. Hence, these cannot be taken as routine type of samples and each sample has to be tested with care, after detailed study. The opinion samples of Customs and Excise received from the Ministry/Board require not only careful scrutiny and full analysis but also sufficient study of literature on the subject and interpretation of the tariff together with implication of different orders. Even a single variation in a constituent may change the classification of a commodity. Sometimes certain complicated physio-chemical tests are required for deciding the nature of a commodity; and when instruments, which are not available in the Central Laboratory, are required for testing, the help of an outside specialised laboratory is sought. The Chief Chemist has cited as an illustration, testing of "Silicones" to establish whether these samples are silicone resins or not. There is no specific chemical test to establish the same. The analytical work on the samples require detailed investigation and several tests including Infra-red spectrum study. Samples were subjected to test by Infra-red, at the National Physical Laboratory as a measure of double check. The Chief Chemist further stated that samples of 'Soft Drinks' were received recently from the Board for test to establish whether or not kola-nut extract are present. A standard method of analysis has to be first worked out for the determination of Caffeine by thin layer Chromotography method. Hence, it can be claimed that this section does analytical investigation which calls for as much skill in analysis as in specialised chemical research.

10.7 Apart from what may be regarded as special cases cited above, the testing procedure for all retest sample is more rigorous and at times different from what is carried out in the Custom Houses or Central Excise Laboratories in the first instance.

10.7.1 Apart from the above, considerable time is required in examining the retest samples before taking up their analysis. The attached proforma marked (Annexure XA) will show the type of actions which are required to be completed before the actual testing can be started. Many times the duplicate sample is required to be tested besides the remnant sample. Sometimes the results on testing duplicate sample differ widely from those on remnant sample and in such cases the triplicate sample is also called for and tested. Besides this, the seizure samples received from the Director of Intelligence, Central Bureau of Investigation and Customs (Preventive) are very often of unknown types and require detailed investigation before settling their identity and finalising the report. For some court cases, the Chemical Examiner is called for cross examination also. All the illustrations given herewith indicate that this section does investigation type of analysis, all of which are time consuming.

10.4.2 Moreover, most of the Board files or opinion cases etc. are also dealt with in this section and these also require considerable time and study.

10.4.3 From these explanatory observations it could be inferred that it is not desirable to prescribe any yardstick/ time schedule for the work carried out in this section. The only guideline is that the samples dealt with in this section should be tested and the report finalised expeditiously consistent with the highest standards of scientific correctness. The quality of work turned out is of paramount importance. In view of the above only experienced chemists who have good grasp of the subject and analytical ability are posted in this section. All these can be examined separately when the Department conducts work study exercise to determine the staff strength.

10.5 This Section has also standardised, methods of analysis in some cases, as for example -

1. Test for Surface Active Agents by stalagmometer.
2. Bleaching test for textiles.
3. Determination of Caffeine etc.

The paper testing procedure, determination of non-volatile content in essential oils, determination of cotton seed oil in a mixture etc. in vogue were also standardised in this section. Recently a method has been worked out for determining the deniers of textured yarn and this has been prescribed in a Government Notification. This section being directly under the Chief Chemist who has also to discharge his duties as scientific adviser to the Ministry/Board has the added responsibility of sometimes laying down the specifications for different commodities for the purpose of identification and classification. Specifications for Tallow, Dementholised Pappermint oil, Diammonium phosphate etc. prescribed in the relevant notifications are cited as some of their contributions.

10.6 The work connected with the issue of Customs Exemption Certificates to the different Departments/ Institutions is also handled in this section. There are more than 900 Scientific and Educational Institutions on the approved list which avail of duty free privileges for import of scientific/technical apparatus/equipment etc. The number of approved Institutions is steadily increasing every year in view of the expansion of research and development facilities in the country. Scrutiny of not less than 200 applications every month is undertaken to assess the eligibility of items intended to be imported. The actual number of items to be scrutinised runs into several thousands every month and each item being of different type requires to be scrutinised on the individual basis to see whether these are eligible for Customs duty exemption. Since huge amounts of revenue are involved, the job requires special care and study of various scientific literature, detailed functions of the apparatus/ equipment and their spare parts in the light of Government instructions on the subject. Even before placing an Institution in the approved list for this purpose, the various aspects like working of the institution, financing source, scrutinising of Research Work conducted, Audit Agency etc. etc. have to be extensively studied. The Chief Chemist thinks that this work by itself justifies a fullfledged separate wing with a Deputy Chief Chemist Incharge, and has formally approached the Board with a proposal. The Committee feels that this proposal deserves proper consideration by the Government.

10.7 All Medicinal and Toilet Preparations containing alcohol or opium, Indian hemp or other narcotic drug or narcotics, which are manufactured in India are classifiable under the Schedule to the Medicinal and Toilet preparation (Extise Duties) Act, 1955. In order to decide the classification under the Schedule, under Rule 68 of the Medicinal and Toilet Preparations (Excise Duties) Rules, Government has constituted a Standing Committee consisting of the Drugs Controller (India), Chief Chemist, Central Revenues, Adviser in the Indigenous system of Medicines and one Pharmacologist nominated by the Central Government. The Chief Chemist functions as the Chairman of the Committee

10.8 The functions of the Standing Committee are to advise the Central Government on all aspects of the administration of this Act and Rules framed thereunder and in particular, on questions whether -

i) A particular preparation is entitled to be treated, or continue to be treated as a genuine medicinal or toilet preparation for the purpose of the Act.

ii) and if so, whether it should be treated, or continue to be treated as a restricted or an unrestricted preparation.

For the purpose of such investigation, samples of the Medicinal and toilet preparations containing alcohol or opium, Indian hemp or other narcotic drug or narcotics are drawn, and forwarded to the Control Laboratory for detailed analysis. Analytical results and other relevant data are compiled and put up before the Standing Committee for their recommendation. This work is highly technical and involves detailed study of the composition of the numerous products manufactured throughout the country by the pharmaceutical concerns.

10.9 After we have adopted a Customs Tariff based on C.C.C.N.(BTN) the Chemists' Committee papers of that organisation are received regularly for perusal. These contain several interesting technical data on several products. These need be processed and the views of our country forwarded to the Committee. The Chief Chemist is also being invited to attend as an observer. It is found that the heads of the laboratories of even small countries like Argentina and Pakistan are sending observers. The fact that we have not adopted the C.C.C.N. tariff in full should not be a bar to his participation. The Committee recommend that such participation will be very useful and enhance the prestige of the office and will be in the country's interest.

10.10 The Chief Chemist has to attend the Collectors' Tariff Conferences or send his comments in advance to the convener on the items to be discussed. The preparation of the brief for the meeting is attended to by this section.

10.11 This section also undertakes standardisation of glass hydrometers received from the field officers.

10.12 This section also prepares standard list of imported dyes, potable spirits, essential oils etc. and circulate them to all the laboratories and the Custom Houses.

SECTION - II

CENTRAL EXCISE WING.

10.13 This wing handles the testing work for the following six Collectorates: (A) Delhi, (B) Kanpur, (C) Allahabad, (D) Indore, (E) Jaipur, and (F) Chandigarh.

10.14 The total number of samples received during the last four years are as follows:-

Year	No. of samples received.
1975-76	11424
1976-77	11370
1977-78	10601
1978-79	8156

The average of these may be taken as 10500 samples. The break-up of commodity-wise percentage (of 1 per cent or more) is given below :-

S.No.	Item	Average percentage for 3/4 years.
1.	Sugar	24.40
2.	V.N.E.Oil	9.10
3.	Vegetable Product	7.07
4.	Paints, Plastics and Resins.	1.63
5.	Paper	1.75
6.	Textiles	52.07

There are 110 sugar factories besides 34 vegetable product factories and 7 Caustic Soda factories under technical control and several other factories under the regional jurisdiction of this laboratory. But for the advice issued by the Board in 1977 reducing sampling to 1/3rd the number would have been easily around 20,000. In view of our recommendation to review these restrictive orders, the number of textile samples may increase substantially. Even now, textile samples constitute 52 per cent of the total number. The work done in this wing is similar to that performed in a Central Excise Laboratory. For convenience it is attached to the Control Laboratory and we are proposing its separation from the Control Laboratory.

10.15 A Chemical Examiner, Grade-I is incharge of this wing. He is assisted by the following staff (sanctioned for this laboratory):

Chemical Examiner, Grade-II	...	1
Assistant Chemical Examiner	...	6
Chemical Assistant Grade-I	...	6
Chemical Assistant, Grade-II	...	6

10.16 Kanpur Collectorate has the highest number of industrial units and on an average this laboratory receives more than 3750 samples from this Collectorate alone. This Collectorate sends the maximum technical references which require inspection/visits and discussion with the Collector and lower formations. We are dealing with this subject of Regional Laboratory and minor laboratory separately. (In that set-up the excise wing will no longer be a part of the control laboratory), and will continue as a separate Regional Laboratory serving the North Indian Collectorates excluding Kanpur and Allahabad.

SECTION - III

OPIUM WING

10.17 The following staff is sanctioned for this Wing:

1. Chemical Examiner, Grade-II	...	1
2. Assistant Chemical Examiner	...	6
3. Chemical Assistant Grade-I	...	6
4. Chemical Assistant Grade-II	...	4

making a total of 17 chemists. The present strength of the staff is based on the revised sanction in 1971 when the number of samples analysed and the certificates issued by the Chief Chemist was 520 and the quantity of opium exported was of the order of 700 tonnes. This position has radically changed as may be seen from the following statistics:-

	1975-76	1976-77	1977-78	1978-79
Number of samples received.	635	737	614	900
Number of Certificates issued.	607	637	630	660
Quantity of opium exported in tonnes.	880	1031	1020	852

10.18 Further, the Government of India has introduced a change in the sampling provisions with effect from 1.4.1978 as a result of which there has been a corresponding increase in the number of export opium samples to the extent of 34 per cent in the Control Laboratory. The change was introduced so as to avoid drawal of samples in the importing country which was being done for several years. The final sampling in India is the basis of export invoice and this enables speedier realisation of foreign exchange. As there is a contractual obligation with some of the buyers to complete the analysis within 2 or 3 months of the drawal of the samples, the extra number of 200 to 250 samples based on the average of the last three years have to be analysed and reported with greater expedition. The Chief Chemist, we understand, has already approached the Board for additional staff, to cope up with the extra work.

10.19 It has been stated that the Government of India has also decided to export crude drugs i.e. crude thebaine/papaverine from Neemuch for the first time. The analysis has to be done in the opium wing for final evaluation of the cost of the drugs. As these drugs are being exported for the first time and are of widely varying composition in respect of minor alkaloids of opium and other ingredients, methods for analysis have to be developed before they can be sent to the buyers for approval of the method and adoption. The laboratory has so far received 34 samples of crude thebaine. Samples of crude papaverine are awaited. The analytical work requires standardisation which according to the Chief Chemist required some additional staff.

10.20 This wing in addition has also been entrusted with the analysis of experimental research samples of opium from the Indian Agricultural Research Institute, New Delhi. This work is being attended to by working on overtime basis every year. The Indian Agricultural Research Institute this year is likely to continue with experimentation and may be sending as many as 400 samples.

10.21 The Central Revenues Control Laboratory, New Delhi is a collaborating laboratory with the United Nations Narcotics Laboratory, Geneva. Some equipment have also been received from the United Nations as gift. Action to instal these instruments after getting one of the rooms air-conditioned is being taken. The Chief Chemist has asked for the following staff to cope up with the extra work:-

1. Deputy Chief Chemist.	...	1
2. Chemical Examiner, Grade-I of the existing post of the Chemical Examiner, Grade-II (Up-gradation)	...	1
3. Assistant Chemical Examiner.	...	2
4. Chemical Assistant Grade-I	...	4

10.22 For testing export of crude drugs, the Chief Chemist has asked for three more posts of chemists, i.e. Chemical Examiner, Grade-II, one and Chemical Assistant Grade-I, two. (The Committee recommends that due consideration should be given to these proposals).

Importance of assay work done in the opium wing.

10.23 We have described elsewhere the number of opium and other samples tested in Ghazipur and Neemuch and tried to evolve a working yardstick for determination of the staff required for such tests. In the opium section of the Control Laboratory at Delhi, only samples of export opium are tested. These tests, it is rightly claimed, cannot be equated with the tests done at Ghazipur and Neemuch. While a larger number of samples are tested there the tests are simpler. The number of tests at the Control Laboratory is smaller, but the tests are more complex. A special note was prepared by Dr. V.S.Ramanathan and Shri D.R.Gupta on the subject. The following paragraphs are basedon this note. In view of what is explained, a different yardstick has to be adopted for estimating staff requirements in the opium wing of the Central Revenues Control Laboratory and this is also explained below.

10.24 The details of the analytical and assay work done in the opium wing is summarised below:-

(a) Contents of each sample are weighed and variations noticed are reported to the concerned factory.

(b) The sample is then dried till its weight becomes constant. This is done by Infra-red Lamp and actually it takes 2 days for complete drying.

(c) Sample is reduced to powder under controlled conditions and is sieved.

(d) 8 gms. of the sample, dried to constant weight, is taken for analysis.

(e) British Pharmacopia method is followed and analysis carried out in duplicate.

(f) The titration is done under controlled conditions under the direct supervision of the Assistant Chemical Examiner concerned and its morphine content is determined. This requires constant watch and attention of the Chemist for atleast two consecutive days.

(g) Variations noticed during the stages of determining the moisture content and later at the stage of morphine availability are subjected to re-check.

(h) In case of variation, results are adopted only when test-results agree within the tolerance limits of repeatability.

(i) Results of analysis are entered on the clip-file and later transferred to cyclostyled forms of certificates.

(j) Certificates are typed (usually 8 to 9 copies) compared and got signed by the Chief Chemist and then are despatched.

(k) The remnants of the sample are sent back to the factory with all details including weight of the opium received after the results are accepted.

(l) One special feature of the Control Laboratory test is that a sample is not taken up for analysis unless two consecutive clear working days are available. The operation, it is claimed, cannot be suspended in the middle and resumed as per convenience. This ties down the officer for 2 days consecutively with a sample.

10.25 Though the methods of assay in opium, followed at Ghazipur/Neemuch is in principle, the same as at Central Revenues Control Laboratory, New Delhi, the condition under which the assays are made at these places are different. At Ghazipur/Neemuch a number of samples are required to be tested every day and the number of chemists employed in the analysis is comparatively few and hence it is not possible to carry out the assay at Ghazipur/Neemuch with that high degree of precision and accuracy as at Delhi. Besides all the operations of the assay at New Delhi are being carried out at controlled conditions of temperature of 68°F (20°C) for morphine assay. The drying and powdering of opium in Ghazipur/Neemuch is being carried out on hot plates using steam/kerosene hot air ovens respectively, whereas the drying in Delhi is being done by Infra-red-lamps under strict conditions which do not allow the temperature to exceed 70°C by adjusting the height of the lamps. The opium powder after drying is carefully sieved so that the entire material passes through a 50 mesh sieve. The powder is again made to dry in air/steam ovens to a constant weight under controlled conditions of temperature. At Ghazipur opium powder from steam tables is being taken up for assay and enough time cannot be spared to dry it to constant weight. Each analysis at Delhi is carried out in duplicate by the same chemist. The chemist at Ghazipur/Neemuch analyses three samples simultaneously and he depends upon the help of the workers for certain stages of the assay while the chemist in Delhi has to attend to every minute step all by himself. At Ghazipur/Neemuch speed in reporting the results is the main factor. At Delhi there is a more rigorous control over method of check and recheck in the analysis. The chemist in Delhi repeates his assay in case the difference in assay between two results is more than 0.12 units. Thereafter, the supervisory gazetted officer checks this assay so that his values are within 0.15 unit. The analysis during summer and particularly humid and sultry weather is much more tedious and considerable variations in results may occur with the slightest variation or relaxation in experimental technique. The records at Central Revenues Control Laboratory, Delhi show that 70 per cent of the cases are checked and 20 per cent of the cases are rechecked again.

10.26 There is a variation in results of about 0.3 to 0.5 unit of morphine content in the weighted average of the lot of opium samples tested at Ghazipur/Neemuch with that of Control Laboratory, New Delhi. Very small decimal point variation in morphine content affects the export value, and when the export earnings are reckoned in millions of rupees such small variations would mean several lakhs of rupees. A higher precision is therefore aimed at.

10.27 The estimation of morphine present in export opium samples was entrusted to M/s Harrison and Self, London, as being impartial analysis for purposes of price evaluation from as early as 1931. In 1958 M/s Harrison and Self, London increased the test fee from 4 guinea to 20 guinea per sample with a condition that the number of samples to be drawn from a particular consignment may be increased according to their directions. While the increase of testing fee could be negotiated upon, though it was considered unreasonable, the condition to increase the number of samples according to their wishes could not be accepted. While the Government of India tried to switch over to some other independent analysts abroad, no consensus could be arrived at with the buyers. Thereafter, it was decided that since opium is a Government monopoly in India and from the point of view of audit and public accounts, the payments from abroad should be settled on the basis of results submitted by a Government of India Chemist, namely Chief Chemist, Central Revenues, New Delhi. Various buyers agreed to this with a proviso for retest by mutually agreed upon panel of independent referee analysts e.g. Dr. Gilbert of Humburg, West Germany; M/s. Herd and Mundy, U.K. and the Government Chemist, London. Though a Government of India Scientist, his position as an impartial scientist has been accepted by foreign buyers. Thereafter the export opium samples whether drawn at destination (i.e. abroad) or at source in the opium factories are analysed by the Chief Chemist, Central Revenues whose test reports have stood the rigours of test of referee analysts in cases of dispute for over 20 years.

0.28 Though the number of disputes over analytical results with the buyers have been few, there have been some reference to refree Analysts abroad; and in nearly 95 per cent of such references, their test-results agreed with those of the Chief Chemist. In fact scientists from U.S.S.R. visited the Control Laboratory, New Delhi and the then Chief Chemist discussed and clarified some points in British Pharmacopeia method of estimation of morphine after which there has been practically no case of dis-agreement in analytical results. The attention of these buyers were drawn to the scientific paper"effect of temperature on the estimation of morphine in opium by the method of British pharmacopeia" by the then Chief Chemist, Central Revenues published in Bulletin on Narcotics pages 69 to 82 volume XXVI No. 2 1974. India has built up a reputation in countries abroad for analysis of opium for purposes of price evaluation. It would be improper to shift the analytical work from Control Laboratory, Delhi to the factories at Ghazipur/Neemuch as sometimes seriously thought of. Then, the analysis is bound to lose its impartial and neutral position and may lead to unpleasantness with the opium buyers. In any event a double check is essential in such a vital matter. But what can be done is to provide both Ghazipur and Neemuch with air-conditioned rooms at 20°C for obtaining better results. Proposals to this effect, we understand, are already made to the Board. The Control Laboratory, Delhi is a collaborating laboratory on behalf of the Government of India with the United Nations Narcotics Laboratory at Geneva. It has been given aid under the U.N.F.D.A.C. for continuing research in the field of nartotics, particularly in opium. Sophisticated equipment have been supplied as gift for this laboratory besides granting fellowships for training to the Chemists in the chemical service. The equipment received are being commissioned and collaborative investigations are proposed to be undertaken to adopt and standardise analysis of opium/poppy straw for phenanthrane alkaloids by Gas-liquid chromotograph method. It will not be advisable to do anything which will reduce the unique prestige which this laboratory has earned.

10.29 The method for assay of morphine officially prescribed in British Pharmacopeia and in other pharmacopeia of many developed countries is essentially based on the time honoured lime water method. The same still continues to find mention even in the current volumes of these pharmacopeia. This only shows the dependability and the universal acceptability of the method based on accuracy and repeatability, though it is time consuming.

Gas Liquid Chromotography method for estimation of phenanthrane alkaloids has been standardised by the United Nations Narcotics Laboratory, Geneva and published in the J.29 and J.39 series. These methods though meant for estimation of phenanthrane alkaloids in poppy straw can suitably be adopted for opium as well. There appears to be no objection to drying this method out before making a decision to give up British Pharmacopeia method ..

10.30 Yardstick for assay work in the Opium Wing and determination of staff requirement.

The following tables giving figures of samples received and tested in Central Revenues Control Laboratory:

Year	Arrears at the end of the previous year.	No. of samples received during the year.	No. of samples tested and certificates issued.	Arrears at the end of the year.
1976-77	64	737	637	164
1977-78	164	614	630	148
1978-79	148	900	660	388

It can be seen from the last three years statistics quoted above that the average disposal of opium samples received in the laboratory is about 642 per year.

10.31 As three tests are performed on each of the 642 samples by the Chemical Assistants, the total number of tests carried out is about 1926.

for this work, because of pressure of work in other sections, only five units are actually deployed here. Out of these 642 samples, 70 per cent are checked again by an Assistant Chemical Examiner who carried out the morphine estimation in duplicate because of the variations in the test-results reported by the Chemical Assistants. When the results obtained by Assistant Chemical Examiner vary by more than 0.15 units, these are rechecked again by another Assistant Chemical Examiner who does a single analysis. The second recheck may be on 20 per cent of the total number of cases. Though, the number of samples taken up for test are only 642 per year the number of tests amounts to 2,959 :

1st stage	642 X 3	1926
Retest in 70 per cent of samples in duplicate.		900
Second recheck on 20 per cent of samples.		130
Total number of tests.		2956

1926 tests are carried out by a total of 10 Chemical Assistants in 277 days. In a single day per Chemist only 0.6953 test is carried out. For one full test, it would require 1/0.6953 days. As three full tests correspond to one single sample, it becomes 3 x 1/0.6953 = 4.5 days; however it should be possible to get a couple of 2 consecutive days in a week at least once in four weeks. So in all a Chemist can do about 5 samples in 4 weeks i.e. in a month. So in a year a Chemist can do 65 samples.

10.32 Coming to the Assistant Chemical Examiner, they do the check analysis in duplicate and re-check in case of difference, by single analysis. So the total number of tests carried out by them would be 450 x 2 = 900 + 130 = 1030 as indicated. Five Assistant Chemical Examiners in one year carry out 1030 tests and one Assistant Chemical Examiner will therefore account for 206 tests in a year of 277 working days. Calculated on the above basis, it would work out to 2 samples per Assistant Chemical Examiner per week on an average.

10.33 For 642 samples, the requirement of (Chemical Assistant) Chemists would be 642 divided by 65 (13 x 5) 9.8 i.e. 10 and the number of Assistant Chemical Examiners will be (450-130) ÷ 104 = 6. The receipt of samples show an upward trend and the number of samples received depends on the size of shipments and possible changes in sampling procedure as well. It will be prudent, therefore, to provide on a permanent basis for an average of 700 samples i.e. an excess cushion of about 10% over current requirements worked as above. In addition about 400 samples per year are received from Indian Agricultural Research Institute experimental farm and only single test is done on these. The extra cushion of about 10 per cent will be able to absorb this work normally. So on a permanent basis there should be a staff of 18 working chemists i.e. 11 Chemical Assistants and seven Assistant Chemical Examiners.

10.34 For disposal of accumulated arrears, taking the figure roughly as 400, ad-hoc provision should be made for some more chemists on the junior level. If the arrears are cleared, depending upon the receipt of opium samples in subsequent years, the position can be reviewed

CHAPTER - 11

RE-ORGANISATION OF THE CONTROL LABORATORY SET UP, AT HEADQUARTERS

11.1 We have described in detail in Chapter - 10 the existing organisation, and have already suggested the separation of the Central Excise, Customs and Land Custom original work, and the formation of a separate regional laboratory to serve the Northern Indian Collectorates. We have also described the opium work, and the responsibility of the Chief Chemist as the certifying Government Chemist. The Opium Wing will perforce continue as a separate wing of the Control Laboratory. The rest of the work performed is really "Control" work; dealing with retest and appellate samples, guiding the technical services and rendering technical advice to the Board and Narcotic Departments, are really the important functions requiring careful attention. This part of the work requires redical re-organisation. We propose to introduce the divisional system we have suggested for regional laboratories, for the Headquarters organisation also for ensuring better performance.

11.2 The Headquarters of the Chief Chemist in view of its heavy work load have not been able to do two main functions which it should do if the service is to be more purposeful and effective. These are:-

(a) Inspections of the subordinate laboratories and development of Research and Development particularly relevant to analytical work. Regarding inspection of subordinate laboratories, we found the Head of the Department has not been able to visit every laboratory even once in two years. There should be more frequent visits to advice the officers at lower levels, to keep liaison with Collectors and to ensure that the standard of work is kept high. Local problems requiring immediate solution, emergency procedures etc. remain un-attended and grievances and complaints become vociferous.

(b) The methods of tests of complex commodities, simplification and standardisation of analytical procedures and keeping the instrumentation and equipment modern. This work requires to be developed.

These essential functions cannot be attended to by the Chief Chemist (Director) unless he has high level assistants. The complements of Chemists can barely manage the technical work. We therefore suggest the appointment of two Joint Directors and dividing the entire work between them under the over-all charge of the Director. In this Division, much of the technical work will be managed by Joint Director (Technical). Opium work and General Administration of the Head office and subordinate formations will be looked after by the other Joint Director (Narcotics and Administration). One of his important functions will be inspecting subordinate laboratories regularly at least once a year, if possible, oftener.

In order to facilitate inspection we also suggest posting of an officer of Joint Director status to Bombay. He will share the inspection and related work with the Joint Director (Administration) Headquarters.

11.3 We consider posting of an officer of the Joint Director's status to Bombay partly because of the pre-eminent position of the Bombay Port. Bombay Customs Laboratory alone handles nearly 40 per cent of all samples tested. There is a concentration of Drawback examination work. The Bombay Customs and the Customs and Central Excise Collectorates in the Maharashtra and Gujarat regions account for more than 50 per cent of the analytical work and account for nearly 70 per cent of total Customs and Central Excise Revenues. Even the Customs laboratory at Bombay alone will justify a Head of a higher status. But we are suggesting, he takes over the inspection and guidance of all the laboratories in the Western and Southern regions; and do the work similar to that assigned to Joint Director (Administration) at Headquarters. His duties are also outlined in annexure XI B.

11.4 In view of the importance of opium and alkaloids and the administrative complexities involved, inspection of the technical work of the scientific staff posted to the two works, will be special responsibility of the Director.

11.5 From the very beginning this Committee was impressed with the necessity for having an up-to-date and elaborate laboratory manual. There is, at present, what is described as a "Central Manual on Chemical Laboratories". This actually is an adaptation of the manual in use in Madras Custom House laboratory. In addition to the Central Manual, the Madras Custom House has issued its own supplement also. This manual deals with problems of administration and house-keeping largely, setting out the duties of various ministerial officers, maintenance of regis-ters, scrutiny of returns, custody and disposal of samples etc. What is needed is not only a manual of this type but a standard book of references for all technical officers working both in the Regional Laboratories and in the Opium and Alkaloid Laboratories. This may be described as a "Test Manual" and the existing manual may continue as a laboratory manual dealing with other miscellaneous aspects of laboratory administration. Even for the Madras Custom House Manual certain amendments have been proposed which are given in annexure XI A. How exactly a sample of a commodity is to be tested, is left to the discretion of the local chemist, aided or unaided by the head of the laboratory. Generally Chemists refer to standard books of references on chemical tests of various commodities like sugar, chemicals, plastics etc. It is in view of this unorganised method of work, very often we get angry protests from trade associations and from individual importers and manufacturers demanding that we disclose the actual method of test adopted in a particular case. The volume of literature on the subject is too extensive, and test methods are being revised constantly with the introduction of new laboratory equipment and new techniques. Our scientific officers should be familiar with all these developments. The Control Laboratory and the Regional Laboratories even now have good libraries and subscribe to large number of scientific journals including journals specialising in certain commodities. What, we would recommend is the compilation of a test manual commodity-wise, giving cross-references to the Customs and Excise Tariff relating to these commodities, and list under each commodity the different tests to be applied giving reference to the authority on which this is based. The numerous publications of the Indian Standards Institution will serve as source books in many cases. This is largely a matter of compilation but the work should be properly organised and done by competent scientists who have an aptitude for such work. A beginning should be made immediately, and at least 2 scientific officers should be placed exclusively for this work with competent clerical assistance. If the necessary literature on any particular commodity or a particular method of test is not easily available in the Control laboratory, they could refer to books available in the other National Laboratories in

Delhi or the library of the Ministry of Science and Technology. The manual will take a couple of years to compile; but parts of the manual should be issued in quarterly series, to all laboratories with instructions to keep them properly compiled till the work is finished. The work even then will continue if the manual is to be kept up-to-date. It will be necessary to issue correction slips from time to time, which should be incorporated with the originals issued. If such a manual is prepared, the work of the laboratory will be simplified, time will be saved, uniformity in test results will be assured and complaints will be minimised. When the manual series are circulated, the Heads of the Laboratories should be asked for information for additions and corrections. Any information already available with regional laboratories on methods of tests should be called for initially, and studied before commencing the preparation of the new Test Manual.

11.6 The details of the allocations of work between the Director and his two Joint Directors is set out in annexure 11 B. The chart showing the reorganised work in the Central laboratory at Headquarters is appended below:-

CHART OF REORGANISED HEADQUARTERS LABORATORY (C.R.C.L.NEW DELHI)

DIRECTOR AND SCIENTIFIC ADVISER

JOINT DIRECTOR TECHNICAL

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Dy. Director Grade II

M. & T.P.;
Customs
Exemptions;
ISI Committee
meetings

2-Divisions:

A.D. - 2
S.C. - 2
T.A. - 2

Duties

1) AD- M.&T.P. & I.S.I.
2) AD- Customs Exemptions

Dy. Director Grade-I

Retest and Appeals.

2-Divisions

A.D.	- 2
S.O.	- 6
Analyst	- 3
T.A.	- 1
L.C.	- 1
L.A.	- 3

AD - Textiles;
AD - other than textiles.

Personnel Administration

a) Parliament Questions;
b) Stores;
c) Library;
d) Gas Plant;
e) Building.

JOINT DIRECTOR NARCOTICS AND ADMINISTRATION

Dy. Director Grade-I

Inspection and Coordination
Research & Development;
Test Procedure manual.
Publication;
Standardisation of Instruments;
Seminars;
Inservice training,
Monthly samples;
Technical reference from field formations;
Standard list of Dyes, spiritous preparations and miscellaneous samples;

4-Divisions.

A.D.	- 4
S.C.	- 1
Analyst	- 1
T.A.	- 2

Dy. Director Grade-II

Opium Export;
Drugs.

2-Divisions

A.D.	- 2
S.O.	- 7
Analyst	-11
L.C.	- 1
L.A.	-11

Director & Scientific Advisor.	=	1
Joint Directors.	=	2
Dy. Directors Grade-I	=	3
Dy. Directors Grade-II	=	2
Asstt. Directors.	=	14
Scientific Officers	=	16
Analyst	=	15
Technical Assistants	=	6
Laboratory Clerks	=	2
Laboratory Attenders		14

11.7 Ministerial and administrative staff for the Central Laboratory.

Now with the reorganised set up proposed in chapters 11 and 12, there will be not less than 20 laboratories and about nearly 600 technical staff under the control of the Director. It will be very difficult for the Director to look after all the Administrative problems unless his personnel Department is well organised. Primarily he would require a Chief Administrative Officer in the junior Class I cadre to assist him in this work. If the work of purchase of sophisticated equipment in the various laboratories is to be centrally coordinated then he will also require an Accounts Officer of sufficient status to help him in these purchases. The Director would also require a personal secretary of the grade attached to officers of the Joint Secretary's level. Even as it is there are not enough stenographers in the Headquarters laboratory. The typing and dictation work have increased and will continue to increase steadily. It is also necessary that stenographical assistance should be provided to all the officers working in the laboratory. Already the Committee is informed that staff Inspection Unit yardstick is available for this purpose.

At present, there is considerable discontent in the ministerial staff on the ground, they have no scope for promotion in this small set up, although promotion chances for technical officers are likely to improve considerably. The Committee feels that whatever additional staff that may be created in the Headquarters' laboratory, this will be determined by the general administrative norm fixed from time to time. Hence in a small service there will not be adequate opportunities for promotion. Under the circumstances, the Chief Chemist has suggested that these posts should be merged with the Delhi Collectorate ministerial staff to form a bigger common cadre, so that there will be sufficient scope for promotion for them. This would also enable clerical staff to be rotated, and the Control Laboratory will get staff with wider administrative experience. The merger will, we trust, be mutually beneficial to the Collectorate as well as to the Control Laboratory. Government might be pleased to view this proposal favourably in the larger interest both of the laboratory services as well as of the Collectorate.

CHAPTER - 12

REORGANISATION OF REGIONAL LABORATORIES AND THE PROPOSED SET UP.

12.1 We give below the list of Custom and Central Excise Laboratories excluding the Opium and Alkaloid Works Laboratories.

HEADQUARTERS :

Central Revenues Control Laboratory - New Delhi - Excise Wing serves the Central Excise Collectorates of Delhi, Chandigarh, Indore, Allahabad, Kanpur and Jaipur.

CUSTOMS LABORATORIES :

1. Custom House Laboratory, Bombay serves the Bombay Port and Air Complex.
2. Custom House Laboratory Calcutta serves Calcutta Port and Air Complex, Haldia Port, and the Central Excise Collectorates of West Bengal, Shillong, Patna and Bhubneswar.
3. Custom House Laboratory, Madras serves the Madras Port, All other Custom Ports in Tamil Nadu and Andhra, Air Complex and Central Excise Collectorates of Madras, Madurai, Hyderabad, Bangalore and Guntur.
4. Custom Laboratory Cochin serves Cochin Port and the Central Excise Collectorate, Cochin.
5. Custom House Laboratory Kandla serves Kandla Port and other Gujarat Ports.
6. Custom House Laboratory, Goa serves Goa Port.

CENTRAL EXCISE LABORATORIES :

1. Central Excise Laboratory, Bombay serves Central Excise Collectorates, Bombay, Poona and Nagpur.
2. Central Excise Laboratory, Baroda serves Baroda and Ahmedabad Collectorates (2 Divisions of Central Excise, Ahmedabad).

3. Central Excise Laboratory, Assam Oil Company, Digboi serves the Refinery of Assam Oil Company, Digboi and Indian Oil Corporation, Noonmati - Gauhati.

4. Central Excise Laboratory, Hindustan Petroleum Corporation Limited, Bombay - serves the two Refineries in Bombay including testing of imported crude.

5. Central Excise Laboratory, Indian Oil Corporation Refinery, Barauni (Bihar) serves the Refinery only.

6. Central Excise Laboratory, Caltex Oil Refining (India) Limited Refinery Vizag. Besides testing of samples of Refinery, it tes-ts imported crude also.

In fact the Calcutta, Madras, Bombay Central Excise, Baroda and Delhi Laboratories serve even now as Regional laboratories, serving several Collectorates each, and the work load of all these Laboratories inevitably shows greater variation, as shown in the Table I at para 12.6. The Deputy Chief Chemists in the major laboratories, on being instructed by the Chief Chemist, supervise smaller laboratories in the jurisdiction of the collectorate where they are located; though their authority is not clearly defined or prescribed e.g. Madras Deputy Chief Chemist supervises the Visakhapatnam Laboratory.

12.2 All Collectors have suggested that every Custom House and every Central Excise Collectorate should have a separate laboratory. One or two Collectors have argued that it is advantageous to have big laboratories fully equipped∠ Looking at the statistics of samples from various Collectorates it will be wasteful and premature to provide every Central Excise Collectorate with a laboratory.

∠which will handle samples from more than one Collectorate instead of having a number of laboratories inadequately equipped.

12.3 The following existing laboratories should be recognised as Regional Laboratories.

1. The Central Excise and Customs Wing of Control Laboratory at Delhi - Completely separated from the Control Laboratory.
2. Custom Laboratory, Bombay (Supervising Goa laboratory).
3. Central Excise Laboratory, Bombay.
4. Custom and Central Excise Laboratory, Calcutta.
5. Custom and Central Excise Laboratory, Madras.

12.4 Next to the Regional Laboratories there should be a second category of laboratories. In this category should fall the existing laboratories at Cochin and Baroda. In addition we recommend setting up immediately of laboratories at Kanpur, Hyderabad and Paradeep.

12.4.1 The Kanpur Collectorate has the largest concentration of industries in North India and a case for setting up of a laboratory there has already been submitted to the Board by the Collector. In a separate letter to the Collector we expressed our support to his proposal for additional space for laboratory accommodation, and a copy of this letter was also endorsed to the Board. This laboratory can be used for testing samples from the neighbouring Allahabad Collectorate also. The total number of samples tested for these two Collectorates during the last three years averages 6000 per year. We have also taken into consideration the existing volume of work and future expansion. The volume of work will be comparable to that handled in Baroda at present. Even after setting up the Kanpur laboratory, the Regional laboratory at Delhi will have enough work load as already pointed out.

12.4.2 There is a good case for setting up of a laboratory at Hyderabad. The industries in the Hyderabad Collectorate are essentially Drugs, Paint, Plastics, Metals and Alloys, Synthetic Fabrics, Glass, Sugar and Vanaspati. The average number of samples now sent from this Collectorate to Madras laboratory is about 3000. The number might increase as the tempo of industrial development in Hyderabad is fairly good.

12.4.3 There is already a proposal to set up a laboratory at Paradeep Port in Orrisa to serve primarily Mineral shipments from that port. The Central Excise samples of Bhubaneswar Collectorate would also be tested in this laboratory. Though the number of samples to be tested including Ore samples may not exceed 300 per year, in view of the communication difficulties in sending samples to Calcutta, the case for a laboratory at Paradeep should be favourably considered. Mineral Ore sampling is complicated and requires the presence of a Chemist and the sampling should also be expedited to avoid delays in shipments. The case is very similar to that of Goa where there has been a laboratory for several years dealing with Mineral Ore shipments. The Collector has justified the demand for a laboratory at Paradeep by referring to the steep increase in exports of iron ores and Chrome ores year after year. The rates of duties for different grades of Iron ore and Chrome ore vary and tests are necessary for determining the grade of ore. At present provisional assessment is made based on the shipper's declaration, and it is finalised only after the receipt of the test report from the Custom House Laboratory at Calcutta. The Collector had also referred to the objection raised in Audit to the acceptance of analysis reports from private agents. It must also be remembered that for sampling the procedure laid down by the Indian Standards Institution has to be strictly followed and in the absence of technically qualified staff, even correct sampling becomes difficult. In view of all these factors a small Customs laboratory for Paradeep appears unavoidable and must be sanctioned immediately.

12.4.4 GAUHATI (SHILLONG COLLECTORATE) : Industrially this area is not very important and the number of samples are not too many. In view of the difficulties of communication, the question has to be viewed more liberally. There is a laboratory attached to the Assam Oil Company Refinery at Digboi. There is none at Noonmati in Gauhati and samples are set to Digboi for test. A Refinery is fast coming up at Bongaigaon. We suggest therefore a laboratory at Gauhati to deal with these two oil Refineries and other Central Excise samples in the Shillong Collectorate. It may even be advantageous to start this laboratory as the first stage as three Refineries are involved.

12.5 In addition we recommend setting up a sub-laboratories at Bangalore, Ahmedabad, Indore, Amritsar, Gauhati and at the Bombay Airport, at a later stage, say 2 or 3 years after setting up of laboratories at Kanpur and Hyderabad and Paradeep. The reasons are explained in the following paragraphs for keeping these recommendations under active consideration for the second stage of laboratory expansion.

12.5.1 BANGALORE : In the case of Bangalore the present number of samples is not as heavy as it is for Kanpur or Hyderabad. The Karnataka area will develop fast and there is a very well run airport complex which is likely to expand rapidly. The traders interested in the airport complex strongly urged the necessity for quicker tests and if the airport is declared an International Airport, transhipments at Bombay will be avoided. So there is justification for starting a laboratory at Bangalore after 2 or 3 years.

12.5.2 AHMEDABAD : Ahmedabad is the country's biggest textile industrial centre and other sophisticated industries are also coming up fast. There is a growing Airport complex. Besides there is a problem which is peculiar to Gujarat. The territory has been divided into two Collectorates viz. Ahmedabad and Baroda. Ahmedabad Collectorate, came in later, largely as a Customs Preventive Collectorate, with several minor and major ports, and has a laboratory at Kandla. Baroda has a fully equipped laboratory but bulk of the Excise work of the Baroda Collectorate, is in Ahmedabad city and its neighbourhood. The trade in Ahmedabad is very keen on having a laboratory in Ahmedabad itself and statistics of samples drawn from the industries in an around Ahmedabad city would justify that. The fact, Baroda is fairly near Ahmedabad, is no justification in itself to deny the premier textile city, a laboratury.

12.5.3 INDORE : Samples from this Collectorate are tested in Delhi. Indore is somewhat isolated for communication and delays are therefore inevitable. The Collector made out a strong case for a laboratory at Indore and in fact pointed out that accommodation facilities are easily available. There are a number of industrial complexes with good growth potential. The number of samples at present would not justify a laboratory, but it is desirable to watch developments for the next two or three years before taking a decision.

12.5.4 AMRITSAR : Close to Amritsar is another industrial centre - Jullundur. These two cities have numerous medium and small scale industries, and though the available volume of trade and revenue may not compare with Ahmedabad, or Hyderabad or Kanpur, the problems are numerous and so are complaints. An infinite variety of textile products are manufactured in these two centres and if adequate testing is to be made, the number of samples will be double or treble of what it is now, and as these are small industries, better facilities are justified. The setting up of a laboratory must be kept under active consideration.

12.5.5 The Collector of Central Excise, Poona has also made a strong case for a laboratory at Poona. In view of its proximity to Bombay one may on first impression feel that a laboratory at Poona is not so necessary. Poona controls country's largest concentrated sugar belt, and in all around Poona, Aurangabad, Sholapur and Kolhapur large number of industries are coming up rapidly. The total number of samples tested from this Collectorate is already in the region of 3000 and the number will steadily increase. Numerous problems which require technical investigation arise here. We think Poona should have a laboratory at the second stage, though a case can be made out for giving a laboratory even at the first stage.

12.5.6 Bombay Airport complex is almost a small Custom House with trade and revenue midway between Madras and Cochin. Accommodation is easily arranged and testing separately for drawback can be expedited if done on the spot, major testing work will of course be done at the Custom laboratory in the city.

12.5.7 Even after these 2 stages, some Collectorates will have no laboratory. Their work will be handled by the major laboratory in the region.

12.6 To illustrate our points, we give below three Tables I, II and III.

TABLE - I

Present set up.

Sl. No.	Existing Laboratories.	Total No. of samples average of 3/4 years.	Collectorate from which samples are received.	Average No. of samples per year
1.	2.	3.	4.	5.
1.	Custom House Laboratory, Bombay	38603	Bombay Port-Import, Export, Drawback and air complex.	38603
2.	Custom House Laboratory, Calcutta.	14120	a) Calcutta Port-Import Export & Drawback.	7705
			b) Calcutta CCE.	3860
			c) West Bengal CCE.	1452
			d) Bhubaneswar CCE.	285
			e) Patna CCE.	763
			f) Shillong CCE.	55
3.	Custom House Laboratory, Madras	20659	a) Madras Port - Import Export & Drawback and Vizag Customs.	6175
			b) Madras CCE.	7200
			c) Madurai CCE	1815
			d) Bangalore CCE.	1624
			e) Hyderabad CCE.	2383
			f) Guntur CCE.	962
4.	Custom House Laboratory, Cochin	4108	a) Cochin Port - Import Export & Drawback.	1443
			b) Cochin Central Excise.	2665

1.	2.	3.	4.	5.
5.	Custom House Laboratory, Goa.	1132	a) Goa Customs.	1132
6.	Central Excise Laboratory, Bombay.	12873	a) Bombay CCE.	9894
			b) Poona CCE.	2723
			c) Nagpur CCE	256
7.	Central Excise Laboratory, Baroda	7079	a) Baroda CCE.	5705
			b) Ahmedabad (2 Divisions).	1374
8.	Custom House Laboratory, Kandla	1309	a) Import Export.	284
			b) Ahmedabad CCE.	1025
9.	Central Revenues Control Laboratory, New Delhi.	12370	a) Land Customs, Seizures	515
			b) Opinion/retest Samples.	403
			c) Delhi CCE	358
			d) Kanpur CCE.	3677
			e) Indore CCE.	1293
			f) Chandigarh CCE.	2619
			g) Allahabad CCE.	1956
			h) Opium Samples.	640
			i) Jaipur CCE.	924
10.	H.P.C.L. and B.P.C.L Refineries, Bombay	615	HPCL,BPCL Refinery.	615
11.	A.O.C., Digboi and I.O.C.L., Noonmati	683	AOC & IOC Refinery.	683
12.	CORIL, Vizag.	328	CORIL Refinery	328
13.	IOC Barauni.	202	IOC, Barauni Refinery.	202

.2.7

TABLE - II

(1st stage of expansion)

Sl. No.	Name of the Laboratory.	Name of the jurisdictional regional laboratory	Total No. of samples average 3/4 years.	Collectorate from which samples are received.	Average No. of samples per year
1.	2.	3.	4.	5.	6.
	I - HEADQUARTERS.				
1.	Central Revenues Control Laboratory, New Delhi.	Headquarters Laboratory.		Appeal, Opium and Alkaloid and retest samples.	
	II - WEST ZONE.				
1.	Custom House Laboratory, Bombay.	Jt.Director (Custom House Lab., Bombay) West Zone.	38603	Bombay Port, Import.Export & Drawback.	38603
2.	Central Excise Laboratory, Bombay.	Jt. Director (Custom House Lab., Bombay) West Zone.	12873	Bombay CCE Poona CCE Nagpur CCE	9894 2723 256
3.	Central Excise Laboratory, Baroda.	- do -	7079	Baroda CCE Ahmedabad (2 Divisions)	5705 1374
4.	Custom House Laboratory, Kandla.	- do -	1309	Import-Export Ahmedabad CCE	284 1025
5.	Custom House Laboratory, Goa.	- do -	1391	Customs Import Export and Drawback. Poona CCE (Goa Division).	1132 259
6.	H.P.C.L.Central Excise Laboratory, Trombay.	- do -	615	Bharat & HPCL Refineries.	615

1.	2.	3.	4.	5.	6.
	III- SOUTH ZONE.				
1.	Custom House Laboratory, Madras.	Deputy Director Grade I, Custom House Laboratory, Madras, South Zone.	16643	Customs Import Export and Drawback.	6004
				Madras CCE	7200
				Madurai CCE	1815
				Bangalore CCE	1624
2.	Custom House Laboratory, Cochin.	- do -	4108	Customs Import, Export and Drawback.	1443
				Cochin CCE.	2665
3.	Central Excise Laboratory, Hyderabad(New)	- do -	2883	Hyderabad CCE	2883
4.	Custom House Laboratory, Vizag.	- do -	1461	Customs	171
				Guntur CCE.	962
				CORIL Refinery	328
	IV - NORTH ZONE				
1.	Central Excise Laboratory, Delhi or Faridabad (New)	Deputy Director Grade I regional Headquarters Laboratory, (North Zone)	5709	Delhi CCE	358
				Indore CCE	1293
				Chandigarh CCE	2619
				Jaipur CCE	924
				Land Customs Samples.	515
2.	Central Excise Laboratory, Kanpur (New)	- do -	5633	Kanpur CCE	3677
				Allahabad CCE	1956
3.	Central Excise Laboratory, Mathura Refinery(New)	- do -	300	Mathura Refinery.	300

1.	2.	3.	4.	5.	6.
	V - EAST ZONE.				
	Custom House Laboratory, Calcutta	Deputy Director Grade I, Custom House Laboratory, Calcutta. (East Zone).	14065	Calcutta Port Import, Export & Drawback.	7705
				Calcutta CCE	3860
				West Bengal CCE.	1452
				Bhubaneswar CCE.	285
				Patna CCE	763
2.	Central Excise Laboratory, Gauhati (New)	- do -	655	IOC Refinery Bongaigaon.	300 (app.)
				Shillong CCE.	55
				IOC Refinery Noonmati	300 (app.)
3.	Central Excise Laboratory, AOC Refinery, Digboi	- do -	383	AOC Refinery Digboi	383
4.	Central Excise Laboratory, Haldia Refinery (New)	- do -	300 (App.)	Haldia Refinery & Import crude.	300 (app.)
5.	Custom House Laboratory, Paradeep (New)	- do -	285	Bhubaneswar CCE	285
6.	Central Excise Laboratory, Barauni	- do -	202	IOC Refinery Barauni.	202

TABLE - III

12.8 Final Regional set up of Central Excise and Customs Laboratories. (Final stage of expansion).

Sl. No.	Name of the Laboratory.	Name of the Jurisdictional regional laboratory for retest purpose.	Total No. of samples Average of 3/4 years.	Collectorates from which the samples are received.	Average No. of samples per year.
1.	2.	3.	4.	5.	6.
I - HEADQUARTERS.					
1.	Central Revenues Control Laboratory, New Delhi.	Headquarters		Appeal, Opium and alkaloids/ Retest Samples Opinion.	
II - WEST ZONE.					
1.	Custom House Laboratory, Bombay.	Joint Director Custom House Laboratory, Bombay.	37043	Bombay Port, Import, Export & Drawback.	37043
.	Central Excise Laboratory, Bombay.	- do -	10150	Bombay CCE Nagpur CCE	9894 256
.	Central Excise Laboratory, Poona (New)	- do -	2723	Poona CCE.	2723
.	Central Excise Laboratory, Baroda	- do -	5705	Baroda CCE	5705
.	Central Excise Laboratory, Ahmedabad (New)	- do -	2399	Ahmedabad CCE	2399
.	Custom House Laboratory, Goa	- do -	1391	Customs Import Export and Drawback Goa Division Poona CCE.	1132 259

1.	2.	3.	4.	5.	6.
7.	HPCL Central Excise Laboratory, Trombay	Joint Director Custom House Laboratory, Bombay.	615	Bharat & HPCL Refineries.	615
8.	Airport Complex Laboratory, Bombay (New)	- do -	1560	Customs through Airport complex.	1560
9.	Custom House Lab. Kandla	- do -	300	Customs Import	300
III - SOUTH ZONE					
1.	Custom House Laboratory, Madras.	Deputy Director Grade I Custom House Laboratory, Madras.	15019	Customs Import, Export, Drawback & Airport complex.	6004
				Madurai CCE	1815
				Madras CCE	7200
2.	Custom House Laboratory, Cochin.	- do -	4108	Customs Import, Export and Drawback, Airport complex	1443
				Cochin CCE	2665
3.	Central Excise Laboratory, Hyderabad (New)	- do -	2883	Hyderabad CCE	2883
4.	Central Excise Laboratory, Bangalore (New).	- do -	1624	Bangalore CCE Airport complex	1624
5.	Custom House Laboratory, Visakhapatnam	- do -	1133	Custom Sample Vizag.	171
				Guntur CCE	634
				CORIL Refineries.	328

1.	2.	3.	4.	5.	6.
IV - NORTH ZONE					
1.	Central Excise Laboratory, Delhi or Faridabad(New)	Deputy Director Grade I Regional Headquarter (North Zone)	4416	Delhi CCE	358
				Land Customs Airport complex.	515
				Jaipur CCE	924
				Chandigarh CCE	2619
2.	Central Excise Laboratory, Kanpur (New)	- do -	5633	Kanpur CCE	3677
				Allahabad CCE	1956
3.	Central Excise Laboratory, Indore (New)	- do -	1293	Indore CCE	1293
4.	Central Excise Laboratory, Amritsar(New)	Deputy Director Grade I Regional Headquarter (North Zone)	2619	Chandigarh CCE	2619
5.	Central Excise Laboratory, Mathura Refinery (New)	- do -	300 (apprx.)	Delhi CCE	300 (apprx.)
V - EAST ZONE					
1.	Custom House Laboratory, Calcutta.	Deputy Director Grade I, Custom House Laboratory Calcutta.	13780	Customs Import Export, Air complex.	7705
				Calcutta CCE	3860
				West Bengal & Orissa CCE	1452
				Patna CCE	763
	Central Excise Laboratory, Gauhati (New)	- do -	655 (apprx)	Shillong CCE	55
				IOC, Noonmati	300
				IOC, Bongaigaon Refineries.	300

1.	2.	3.	4.	5.	6.
3.	Central Excise Laboratory, A.O.C., Refinery Digboi.	Deputy Director Grade I, Custom House Laboratory, Calcutta	383	AOC Refinery	383
4.	Central Excise Laboratory, Haldia Refinery (New)	- do -	300	Haldia Refinery	300
5.	Custom House Laboratory, Paradeep Port(New)	- do -	285	Paradeep	285
6.	Central Excise Laboratory, Barauni.	- do -	202	IOC Refinery Barauni.	202

THE REGIONAL LABORATORIES AND THE COLLECTORATES.

12.9 Having recommended higher scales of pay and status accompanying a class I Service (Chapter 18) and the reorganisation of the Revenues Laboratories it is necessary to consider the relationship between the Heads of the Laboratories and the Collectors in whose buildings the Laboratory is housed. The position is somewhat complicated except for the Bombay Customs Laboratory.

12.10 BOMBAY CUSTOM HOUSE LABORATORY :

This Laboratory is for the exclusive use of the Bombay Customs Collectorate. Even for the Bombay Customs Laboratory it has to be observed that there is a sub-laboratory at Goa which deals largely with Customs export samples. But the position is made easier because the Collector of Customs, Goa who is of the status of a Deputy Collector is under the administrative control of the

Collector of Customs, Bombay. In our scheme, this Laboratory will be supervised by the Joint Director, Western Zone Customs Laboratory, Bombay.

12.11 BOMBAY CENTRAL EXCISE REGIONAL LABORATORY

We examined the possibility of combining the Customs and Excise Laboratory. The shortage of accommodation in the Bombay Custom House even when the contemplated annexe is completed, and the heavy work load of the Excise Laboratory would not justify the re-creation of a single Customs and Excise Laboratory. The Central Excise Laboratory now handles samples from the Poona and Nagpur Collectorates. There are two Refineries which in our scheme require strengthening of laboratory test controls. The Poona Collectorate has urged strongly the need to have its own laboratory but we are suggesting according this at a later stage. The Bombay Central Excise Collectorate is split into two in view of the huge concentration of industries in the Bombay and neighbourhood areas. The Deputy Director, Central Excise Laboratory will supervise the Refinery Laboratory and the new laboratory that may be set up in Poona. A certain number of scientific officers will be attached to him to do the advisory work, for the Bombay and Poona Excise Collectorates and the Nagpur Excise Collectorate.

12.12 THE MADRAS REGIONAL LABORATORY.

The Madras Customs Laboratory serves the Madras Customs, the Central Excise Collectorates of Madras, Madurai, Bangalore, Hyderabad, Guntur and the Visakhapatnan Port Collectorate. To this will have to be added the Cochin Customs and Central Excise Collectorate, with its own laboratory. We are also recommending a laboratory for

Hyderabad and strengthening of the Visakhapatnam Laboratory which now serves largely as a Refinery Laboratory. The Madras Customs Laboratory will function as the regional laboratory for the entire southern region and supervise the work the other laboratories in the zone.

12.13 DELHI REGIONAL LABORATORY.

We are suggesting the separation of ordinary Custom and Central Excise work done in the Central Laboratory and forming a separate regional laboratory for serving the needs of the Delhi, Chandigarh, Allahabad, Kanpur, Jaipur and Indore Collectorates - quite a larger region. We have examined the justification of a separate Sub-Laboratory at Amritsar and Indore and have recommended a laboratory at Kanpur. When the Mathura Refinery comes to full production stage, the requirement of a sub-Laboratory attached will have to be considered.

12.14 CALCUTTA REGIONAL LABORATORY.

Calcutta Custom House Laboratory now serves the requirements of the Custom House, the two Central Excise Collectorates with Headquarters at Calcutta, the Bhubaneswar, Shillong and Patna Collectorates - thus dealing with six Collectors. In this region, we have Refinery Laboratories at Digboi and Barauni. We are recommending a Refinery Laboratory at Haldia and Custom House Laboratory at Paradeep. A Central Excise laboratory at Gauhati has been recommended.

12.15 Besides these five Regional Laboratories there are two Opium and Alkaloid Works which are being dealt with separately.

12.16 The question for consideration is the relationship between the Collectors of Customs or Central Excise as the case may be and the Deputy Chief Chemists who will be designated as Deputy Directors except Bombay where there will be a Joint Director at the customs laboratory. As pointed out earlier, except for the Bombay Customs Regional Laboratory, all the other regional laboratories have dealings with half-a-dozen Collectors. The present position is the Deputy Chief Chemist is fully subordinate to the Collector in whose jurisdiction the laboratory is located for all administrative purposes, even for matters of house-keeping, purchase of laboratory equipment, books, periodicals etc. and for provision of Class IV staff (peons etc.). This is being resented by many of them. With the increase in status and pay, this position will require review. One suggestion that occurs to us is that he must be treated on a par with Deputy Collector or Additional Collector outside Headquarters like the Deputy Collector at Goa or Visakhapatnam with a limited separate budget for specific purposes. The matter requires more elaboration in the interest of clarity. In essence, he should be declared Head of Office with all the powers that go with it, under the overall supervision of the Collector for administration purposes.

12.17 CONFIDENTIAL CHARACTER ROLLS.

We have made provision for three Joint Directors, two at the Control Laboratory and another at Bombay. One of the Joint Directors at Delhi, and the Joint Director, Bombay will inspect the laboratories in their zones as indicated in our list of duties, and would also write the character rolls of all the senior scientific officers working within the zone and countersign the reports of the Junior officers. These reports will be forwarded to the

Director after the Collector concerned has seen. The Collectors countersignature is not necessary if a Joint Director is the reporting officer. This will do away with one of the existing irritant. It is open to the Collector to report to the Board direct, if he has any adverse comments to make on any Deputy Director or other Junior Officer.

12.18 DIRECTORATE OF LABORATORIES.

The Service Association have suggested that the laboratories services should be regarded as a separate Directorate like the several Directorates under the Board. Apparently, their purpose in making this suggestion is that this will give them some independence but much more than that some financial benefit. We are not fully convinced of the advisability of treating this as a separate Directorate. The Regional Laboratories and other laboratories are adjuncts to the Custom Houses and Central Excise Collectorates and should function under the Collector in whose jurisdiction the laboratory is located. If it is a separate Directorate, the Regional Laboratories may feel that their primary loyalty is only to the Directorate Headquarters in Delhi and this feeling once generated will complicate matters and injure the large interest of the Revenue Department. The other reasons which they have in mind and which they expressed during the discussion is that as the Directorate will have a separate budget, then the Director will be able to allocate funds for purchase of equipment etc. without going frequently to the Board for financial approval. This plea appears to be reasonable and it should not be difficult for the Board to place at the disposal of the Director of Central Revenues Laboratories, Funds which he might distribute to the Regional Laboratories on his discretion without going up to the Board for approval constantly.

At present he has the financial powers of a Head of Department and his budget allotment is only for the needs of the Control Laboratory at Delhi. We are suggesting additional sophisticated equipment for the Control Laboratory and also for the Regional Laboratories. While the normal expenditure of Regional Laboratories relating to purchase of consumable stores, such other ordinary laboratory-ware will be met from the Collectorate Budget, it is felt that there must be some coordination at the Centre for purchase of new or costly equipment./ His powers of sanction should be liberalized subject to the usual financial scrutiny and audit.

12.19 It is mentioned that in the several Directorates under the Board, Class-II and Class-I officers are working on deputation basis with different designations. The implication here is that the technical officers working in the Control Laboratory are on deputation from the Regional Laboratories and should, therefore, get the deputation allowance, comparable to the Deputy Directors or Assistant Directors in the other Directorates under the Board at present. It can be argued that these officers are handling technical work of a more difficult nature and assume more responsibilities. Their advisory work is much more important and so also their technical work both on the Customs and Excise as well as on the Narcotics side. We have already explained the nature of the work done by the various wings of the Control Laboratory indicating the higher order of performance expected of officers at Headquarters. We think it is only fair in view of the parallels pointed out that officers, other than the Director and Joint Directors, should be given special pay and it should be laid down that these posts may be rotated

/The Director should have these powers and his budget allotment should cover the requirements of Regional Laboratories for purchasing costlier equipment.

so that special pay does not become an attraction for continuing indefinitely at Headquarters. Such practice already exists when officers are drawn to the Secretariate or to the Directorates on deputation from Collectorates.

a study made by an Officer of the Department of Expenditure (F.M.O.) in 1967-68. This officer, it is reported, visited the Bombay Custom House and spent a few days in the laboratory. The working of the laboratory was organised on a unit basis, each unit consisting of one Assistant Chemical Examiner, one Chemical Assistant Grade-I and one Chemical Assistant Grade-II. The yard-stick prescribed per unit was 2750 samples per year on the basis of 275 working days and that the out-put of samples per unit per day was taken as 10 samples (4 + 4 + 2), i.e. the two Chemical Assistants doing 4 samples each and the Head of the unit doing two himself besides guiding and controlling the work of the juniors. These figures were arrived at in 1967-68 on the basis of the study in the Bombay Custom House Laboratory only. It may straightaway be said here that the Heads of the laboratories feel that these are not realistic estimates any longer, in the context of the changes in tariff which necessitate more extensive analysis. It is the general feeling among Collectors also that the yard-stick of 2750 samples is unrealistic. However, only one Collector has come forward with a suggestion that 2000 is a reasonable number. This is, however, not based on any detailed study. No All India yard-stick of "samples per unit" was ever worked out.

13.4 Critical appraisal of the existing norm.

The tentative norm of 2750 samples for a year per unit has been the basis for sanction of staff for the Revenue Laboratories. While it is admitted that there should be a norm for the purpose of sanction of staff, in practice it is difficult to conform strictly to any norm in view of the variety and change in the number and complexity of samples. Unlike a quality control laboratory where a single type of commodity is tested, the type of commodities tested in these laboratories varies from day-to-day. Apart from the broad distinction of Customs and Excise, there does not appear to be any rational commodity-wise division although the staff have been sanctioned on the basis of unit system of work. No unit was designated to specialise in any particular commodity or group of allied commodities which will enable the senior chemists to acquire expertise in some field and motivate them to do some research work so as to simplify the analysis and make it less time consuming. One of the arguments given for non-adoption of the commodity-wise division system is that it is very difficult to predict that a particular type of sample will be received uniformly in adequate numbers throughout the year and that some sections of staff will be without much work while in some other sections there may be greater workload. Now in the present broad division of Customs and Excise, it becomes possible to distribute samples to all the Chemists thereby ensuring that there is uniform workload for every one. In four laboratories a certain amount of specialisation and division of work has been achieved by earmarking certain types of samples to a particular chemist. The selection of a particular chemist for handling particular samples may not have any relevance to seniority but depends on the suitability and willingness of that chemist to handle that particular line and the initiative of the Head of the Laboratory. While this has perhaps helped the laboratory in disposing of a larger number of samples, it has not helped in achieving the object of carrying out specialised testing work on each commodity which becomes so relevant in a present-day-laboratory. Further, when all the Chemists have their hands full with testing work, they have neither the time to read the latest technical journals and books for up-dating their knowledge, nor sufficient opportunity to acquire experience in sophisticated instrumental analysis. The prevailing arrangement have not been conducive to do any creative thinking in the development of improved and quicker method which will safeguard revenue. A certain amount of creative activity is necessary for the fostering of scientific spirit in any scientific service and without opportunity for such activity the chemists themselves generally tend to degenerate and their talent stagnates. Some amount of Research and Development will have to be built in so that there is a feed-back of information for improving the present analytical methods and procedures and to keep abreast with rapid scientific development that is taking place throughout the world. One leading scientist whom we interviewed remarked that in laboratories of this type if there is no Research and Development involved, deterioration in performance is inevitable. The norm fixed so far has not given scope for these activities. Further, it was pointed out to the Committee that there has been no provision for leave reserves against sanctioned posts. When two or more officers are on leave, work is either delayed or the quality diluted to avoid delays. It is pointed out that the Administrative team did not include in it any scientist.

13.5 The Committee also had opportunity to visit the National Test House, Calcutta and other institutions like Indian Institute of Science, Bangalore, Indian Petrochemicals Corporation Ltd., Baroda, State Drug Laboratory, Baroda, National Chemical Laboratory, Poona, the Industrial Texicology Research Centre, the Central Drug Research Institute at Lucknow and the Central Forensic Science Laboratory, Delhi, (Annexure XIII D). We discussed with the Directors and Senior Scientists in all these institutions the question of norms and yardsticks and all of them are of the opinion that the yardstick is a variable factor and no laboratory should be bound by any arbitrary standard for any length of time. Though it is necessary to have for guidance some working norm, it has to be flexible enough to give due weightage to the various factors influencing the flow of work, and the varying complexity of tests involved particularly in the context of multifarious changes brought about in the Customs and Central Excise tariffs. Drawback rates are an added complication. The list received from the Bombay Custom House of articles requiring tests runs to several hundreds. This list has been analysed and the result given in the tabular form (Annexure XIII A) which is self-explanatory. It can be seen that in the case of imported articles large numbers (37 per cent) are sent to the laboratories to determine both the classification as well as compliance with I.T.C. licence description and only about 17 per cent for mere classification for assessment. Variations in Import Trade Control policy may affect the number and proportion as well as complexity. The number of tests is likely to increase in the years to come and add to the work-load and responsibility of the laboratories. The extent of instrumentation currently employed in analysis is not as high as it ought to be. It is, of course, not possible to extend instrumentation to all kinds of tests, although it may reduce the time factor in some cases. It can be introduced only after some research work and comparative study. This is a matter which should be kept in mind by Heads of Laboratories, and, in fixing norms, the lack of adequate instrumentation facilities should not be lost sight of.

13.5.1 We were informed by the Joint Director of National Test House who is a member of this Committee that the Staff Inspection Unit carried out certain studies in their laboratory and the Staff Inspection Units themselves were not prepared to prescribe regular norms and had advised the laboratory to test check what they called their "tentative norms". The tentative norms worked out between February, 1967 to January, 1977 for the scientific officer/scientific assistant in the National Test House is as follows:-

1. Metal, Coal, Standard Oils, High Polymer, Paints, Enamels and Varnishes.	155 per SO/SA per year.
2. Textiles, rubbers and plastics.	495 per SO/SA per year.

It should also be noted that the Staff Inspection Unit study team did not have on it a competent person with scientific or technical qualification.

13.5.2 From the foregoing, it is clear that determination of norms in terms of number of samples per chemist has, at best, only limited value. A detailed work Measurement study in the Revenue Laboratories by a team with which qualified technical expert is associated may be able to provide a fairly correct average figure for the number of samples capable of being analysed by one chemist. Whether the average arrived at will be a practicable norm would still remain to be seen since such studies in the ultimate analysis tend to be rather mechanical. Nevertheless, Work Measurement Studies have their own value and we feel that such a study of the work in Revenues Laboratories will be profitable. This is a rather involved and long drawn process and this Committee was neither equipped for it, nor did it have the time to undertake it. However an attempt was made, and the Committee asked the four Major Laboratories viz. Calcutta, Bombay Customs, Bombay Central Excise and Madras to furnish details in the proforma stated in Annexure XIII B. The data received is analysed and Projection shown in Annexure XIII C. An approximate figure of additional requirement of staff may be arrived on the basis of the present pattern of distribution of samples obtained from these laboratories, and the practical experience of some of the technical members of the Committee who have considerable testing experience. From a careful examination of the types of goods subjected to analysis in these laboratories, it is seen that the samples received may be roughly classified into three categories.

a) Simple.
b) Complex and
c) Very complicated, according to the nature of the tests involved.

Simple samples are those which require only a few hours of testing and reporting, Complex samples are those which will require about 1 to 3 days and the very complicated samples are those which will require as many as 4 to 6 days for completing the tests.

13.5.3 Some of the major laboratories have emphasised that the present yardstick cannot be relied upon for judging the staff strength for the following reasons:-

i) The present norm does not take into account many other items of work done by chemists in addition to the testing work e.g. standardisation of solutions, carrying out trial experiments etc.

ii) Inadequacies of equipment, availability of chemicals, other necessary reagents, services and reference to literature, has not been taken into account.

iii) The other works done by Chemist such as checking of factory returns, visit to the factories, indexing of technical opinions and articles figuring in the technical journals are not taken into account. It is also felt that this norm does not allow any scope for Research and Development work to any chemist which however has its own value and very desirable.

13.6 How Yardsticks suggested.

It is seen from the Government of India orders the number of working days in a year for a single worker has to be taken for calculation as 277 days. It is also seen from statistics received from the Bombay Custom House Laboratory that on an average 50 per cent of the samples may be deemed to be "simple", another 25 per cent of the samples "complex", and that the rest "very complicated". In the opinion of the scientific members of the Committee, a Chemist can analyse in a week at least 3 simple samples a day for 3 days, and also plan to attack one very complicated sample which will take 4 to 6 days. The complex samples can be done at least at the rate of a sample per day for 2 days and the very complicated samples on the basis of 1 sample per week. So in all, 12 samples (3 x 3 + 1 x 2 + 1) can be expected to be done per week by a single Chemist. Taking the number of working days as 277, i.e. roughly 46 weeks (six days week), it comes to about 552 samples per year per chemist. So, even allowing for few more samples, the committee feel, on the basis of the data given above and assuming that even the Assistant Chemical Examiner (who may be differently designated) will also do the same number of samples, the figure per unit of 3 chemists would come to about 1656 samples per year which is much below the present yardstick of 2750 samples per unit. We have so far dealt only with the chemists' testing time but there are other administrative factors which influence the speed of communication of the results to the parties affected. These depend on the ministerial staff strength, stenographers etc. There does not however, appear to be not much loss of time in countersigning the reports submitted by the Chemists, by the supervisory officers in the laboratories.

The yardstick arrived at, as explained above, has been taken as the basis for structuring of the Regional Laboratories and sub laboratories.

13.7 Division in Laboratories - Commodity based.

The Committee feels that in any scientific laboratory, there should be division for testing the major commodities and that each division should have all the testing instruments which are required for these commodities. We have already observed that efficiency, speed and reliability of testing depends to a large extent on instrumentation. We are suggesting separately the additional apparatus and equipment required for each laboratory (Chapter 14). While the supervisory officer or the Assistant Director can be posted on permanent basis for a particular period, the number of chemists working in each division should be flexible, so that it will be possible to divert some chemists from a division which has smaller number of samples during a particular period of time and to another division where there may be larger number of samples. This way, the overall work will not suffer in the laboratory; working in these divisions, chemists also will get the necessary expertise for investigational work. This will also help the chemists to publish scientific papers as well as suggest improvements in the current method of testing. These divisional heads of the laboratories should be permitted to attend symposia and seminars and to read "Scientific papers" and thus get job satisfaction as well as recognition in the scientific community which is essential for a career scientist. The senior chemists heading the division can train the junior chemists in handling sophisticated instruments. Thus it will be possible to generate scientific activity throughout the Service. At present the chemists are handicapped because they do not get specialised testing experience. Senior Officers of the Service represented that while facing cross examination on courts, the lack of specialised experience in a particular field is high-lighted by the party's lawyers so as to weaken Government case. A system of refresher courses and visits to major outside laboratories should be devised and the set up should be designed to develop specialisation. Government should also not stand in the way of officers publishing Scientific papers etc. as in totality technical knowledge develops and the prestige of the Department and the chemical service would automatically go up.

CHAPTER - 14.

SPECIAL APPARATUS AND EQUIPMENT

14.1 One of our terms of the reference is "the adequacy or otherwise of modern testing facilities and improvements in the apparatus, equipment, fittings and literature needed in the context of technology and wide range of products that the departmental laboratories are called upon to test".

14.2 The Committee visited all the Revenue Laboratories and made a complete assessment of the position. The Committee also issued special questionnaire to find out the nature of samples that are being sent to the outside laboratories in the absence of test facilities in the Revenue Laboratories. The list has been given under Chapter 5 - "Test conducted by the outside Laboratories". Perusal of this list will show that the samples which are sent to the outside laboratories in the absence of the testing facilities in the Revenue Laboratories are not many. But the inconvenience caused to the trade on this account is considerable as the assessment is kept pending in the absence of test reports. Further the Customs Tariff has also undergone change and that the new Customs Tariff is in operation with effect from 2nd August, 1976. The Board has approved the purchase of few modern instruments and apparatus for these laboratories as early as January, 1976. The laboratories are in the process of acquiring these equipment. From the list that has been approved by the Board, the Committee felt that the purchase of X-ray Diffraction apparatus for the Madras Laboratory may be deferred till such time the work-load justifies its purchase and the staff gets the necessary training in handling this instrument. The other instruments mentioned therein may be acquired, if not already purchased. Similarly, it is seen that the Neemuch

Laboratory has made out a case for the purchase of Nuclear Magnetic Resonance for Research and Development. The consensus of opinion of our Scientist-Members is that the equipment like Nuclear Magnetic Resonance costing 8 to 10 lakhs are unnecessary and will not be put to purposeful use in a small research unit. The Government may re-examine this matter before approving its purchase for the Neemuch factory.

14.3 Already the issue regarding the Alcoholometry is discussed under the Chapter 7 on "Rationalisation of the Custom and Central Excise Tariff". The other equipment recommended for the existing laboratories is given under annexure (XIV ABCD). Great care has been taken not to include apparatus which are very costly (i.e. more than 4 to 5 lakhs) and also instruments which will not be used frequently. At the same time it is pointed out that in these days of rapid technological advancement, our laboratories cannot remain antiquated and will necessarily have to foster the scientific spirit in the staff by equipping the laboratories with adequate modern testing facilities. The instruments also need be kept in dust free rooms preferably air conditioned and properly serviced.

14.4 Our scheme visualises that the Regional Laboratories must be fully equipped and that the smaller laboratories can avail of the special testing facilities in the Regional Laboratories, when required. The Refineries Laboratories are to be adequately equipped for testing mineral oil products figuring in the Tariff.

14.5 Our attention was drawn to the Board's letter of 30th April, 1979 enclosing copies of the proceedings of the Estimates Committee, 28th Report dealing with laboratory facilities. The Estimates Committee had observed that it is uneconomic to equip Customs Laboratories with all the paraphenilia media for test, while such facilities are available in Government and

Semi-Government laboratories. This was discussed with the Scientist-Members of this Committee. In their opinion the specialised laboratories are equipped to deal only with such projects as are assigned to them and there is no provision for analysin the samples from Customs and Excise Departments on a priority basis except in unavoidable cases. Even if samples are sent to such laboratories, it would mean more delays and perhaps more expenditure also. We, therefore, reiterate the views already expressed that Customs and Excise laboratories should be self-contained as far as possible.

14.6 Another important aspect is the training of the staff to handle these instruments and maintaining them in proper working condition. It is seen that several institutions in the country like Central Scientific Instruments Organisation, Chandigarh; Institute of Science, Bangalore; and various Indian Institutes of Technology will be in a position to train the working Chemists to handle sophisticated instruments. The Department can avail of these facilities and depute one or two officers at a time for training. The Committee has proposed recruitment of two Instrument Engineers at the junior Class I level in Bombay and Delhi. The Instrument Engineer at Bombay can look after the instruments in the South and West Zones laboratories and the Delhi Engineer can look after the instruments in the North and East Zones Laboratories. If the laboratories are equipped with above instruments and the new laboratories proposed are also equipped adequately, the Committee feels it will go a long way in meeting the demands of the trade for carrying out all the necessary tests in the Revenue Laboratories themselves.

14.7 The post of librarian has also been recommended for all the laboratories, so that the laboratories can subscribe to the latest scientific journals and purchase books and maintain them properly after codifying the necessary articles featuring in them. The Committee has observed that the laboratories, even now, have enough technical books covering different fields of technologies. What they need are trained librarians.

14.8 The purchase of sophisticated equipment and apparatus by the Revenues Laboratories should be coordinated by the proposed Joint Director of the Headquarters Laboratory.

14.9 The Joint Director at Delhi will take complete stock of all the sophisticated apparatus in all the laboratories and will redistribute surplus or new constantly used apparatus to the newly started Revenues Laboratories or the Departmental Refinery Laboratories.

14.10 It is estimated (vide Annexure XIV D) that the total cost of the new equipment, we are suggesting, would be at present around Rs. 30 lakhs for Regional Laboratories, and only Rs. 70,000/- for Refineries, and Rs. 8 lakhs for Opium and Alkaloid Works. An investment under Rs. 40 lakhs on Laboratories should be regarded as quite moderate taken against Rs. 8,000 crores of Customs and Excise Revenue. This is by no means an unproductive investment.

CHAPTER - 15.

LABORATORY ACCOMMODATION AND INFRA STRUCTURE.

15.1 A laboratory is not a haphazard collection of rooms; it is designed for a specific use where each room has a definite function and whose location and arrangement in relation to the others also serve a definite objective. There must be a unity of purpose and correlation. If a building, built without such a design, is made available for the creation of laboratory, it would be necessary to improve the structure by minor alterations and adjustments. Each laboratory should be provided with a few minimum necessities to ensure ease and safety in working. There should be two easily accessible exists. The arrangement of immovable fittings should be such as to provide adequate moving space between the benches. There should be no fittings on the floor which would hinder or obstruct free movement. The reagent shelves should be easily accessible and be so designed to prevent bottles from falling off due to vibration.

15.2 Laboratories should be provided with adequate ventilation and efficient exhausts to prevent the build up of the concentration of toxic vapours in the atmosphere.

15.3 A chemical laboratory should ordinarily have separate rooms -

(a) for doing hazardous operations;
(b) Temperature controlled room;
(c) Dark room;
(d) for furnaces etc.

The furniture used in the rooms should be made of fire resistant material.

FUME CUPBOARDS

15.4 Every working room should be provided with an efficient fume cupboard, sufficiently large to permit complete enclosure of apparatus normally used for convenience it may be located in an ante-room. A sink for the washing of apparatus used for handling toxic materials must be available in each working room. The fume cupboard should have corrosion-proof fittings. It should be provided with light so placed that the whole cupboard is illuminated. The cupboard should be so designed that there is a strong upward draught even when the shutter is open and there is no chance of any fumes entering the laboratory. In rooms where work with extremely poisonous gases is done, it is advisable to have an air inlet at the bottom (balances draught cupboard) so arranged as to sweep everything to the exhaust. It is desirable to have atleast one such cupboard in every chemical laboratory. This is desirable to ensure complete removal of poisonous gases from the working areas. Further instructions can be had from I.S. 4209-1966.

SERVICE CONNECTIONS

15.5 All pipe lines in the laboratory should be differently coloured as specified in I.S. 2379-1965 specification for colour code for identification of pipe lines, and each room of the laboratory should be provided with stop-cocks at an easily accessible and prominently visible place so that in any emergency all services to a room can be cut off from one point. There should also be arrangements for cutting off the service connections of the entire laboratory from one place.

15.6 Sinks and drains should be made of chemically resistant meterials and the drains should be properly trapped and vented. It would indeed be false economy to use chemically non-resistant materials for the purpose of minimising expenditure, thinking that there will be no occasion to discharge highly corrosive liquids into the sinks. It may happen that sooner or later, lead drain installed for a weak effluent may have to carry concentrated nitric acid with disastrous results.

15.7 The sinks should, wherever feasible, be flushed with liberal quantity of water after the contents from reactions vessels are discharged into them.

15.8 Similarly, draining boards should be made of, or at least covered, with non-absorbent material. Drain boards made of wood absorb chemicals easily and tend to give off vapours for a long period.

STORES

15.9 The store room should be well lighted and well ventilated to avoid building up of toxic agents. Care should be taken in the light fittings in the store room. Great care should be taken in the issue of bulk items and also of explosive materials; for storing the latter there should be a separate small room fitted with fire extinguishers.

LIBRARY

15.10 There should be a big room so that at a time 10 Chemists can sit in comfort and read books and journals. There should be space for the librarian to sit and work. It should be well lighted and well ventilated. In order to preserve these books for posterity it is preferable this room is air-conditioned.

NORM FOR SPACE

15.11 There is a norm of space allotment for staff working in the laboratories worked out by I.S.I. This note was given by the Joint Director, National Test House who is a member of this Committee.

15.11.1 The norms as given by the I.S.I. is 200 to 300 Sq. ft. (20 to 30 sq. mt.) per worker; but for the type activities of testing, this may be on the liberal side.

15.11.2 Normally it is not necessary to provide separate sitting space for auxiliary staff like assistants and attenders as they are expected to be occupied in their working space.

15.11.3 Space for officers : C.P.W.D. norm; for each supervisory officer space allotment either in the laboratory or adjacent to the laboratory has been made on the basis of 20 sq. mt. per officer. A separate Rest Room and Cabin for officers has been provided for their relaxation i.e. 130 sq. mt. for 8 to 10 officers.

15.11.4 There should be separate room for the ministerial staff attached to the laboratory and the space is determined by the norms for general offices.

15.11.5 There should be a separate room for receipt and despatch of samples. This room should have provisions of racks for keeping the samples and also should have a partition to segregate the remnant samples from the samples which are received for test in the laboratory.

15.12 The Committee has visited all the Revenues Laboratories (Annexure XV). These laboratories were constructed several decades ago in some cases, as the space allotted was not specifically designed for use as laboratory. Various adaptations have been made from time to time. Still conditions are not perfect. Future adaptations and repairs should be done after proper consultation with the Head of the Laboratory. The Laboratory at Baroda is in a private building and fume cupboards are not working. The building landlord has not permitted them to construct fume cupboards on the plea that it will spoil the building. In Visakhapatnam, the Committee felt that the proposed laboratory should be situated on the first floor rather than on the ground floor of the old Custom House because the fumes of the laboratory, if it is situated in the ground floor, may cause discomfort and inconvenience to the people working in the first floor.

GENERAL DEFECTS

15.13 Except in few laboratories the fume cupboards are not in working condition. In Government buildings, these are being attended to by Central Public Works Department. It is reported that the Central Public Works Department engineers are not able to attend to them efficiently. In the absence of fume cupboard the health of the staff will be very much affected. So the Committee strongly recommends that in a situation like this, the Head of the Department should be free to call any reputed firm and get the fume cupboard repaired or install new ones replacing the old and the constrains of Central Public Works Department be entrusted with the work need be waived. The Committee noticed that in some Indian Oil Company Laboratory at Kandla, an exhaust fan kept near the outlet of the fume cupboard was very effective. The idea deserves to be copied.

15.14 A laboratory should normally be located in buildings where there is a facility for providing all safety measures as specified in the above referred I.S.I. specifications. It will be preferable to install the laboratory in the top floor if it is a multi-storied building.

15.15 The Central Excise Laboratory at Bombay is located inside the factory premises and in a locality, which is highly congested. Flooring in the laboratory, is very uneven, and being located in an industrial area there is deposition of smoke and dust. However, there is enough space in the laboratory and the lighting is good. The Committee recommends that the flooring should be improved and sufficient exhaust fans should be placed so as to make the place dust free. The location of the laboratory in a crowded suburb is very inconvenient from all points of view. If any plan is there for increasing building accommodation for the Central Excise Department a well designed laboratory conforming to all the norms should receive priority.

LABORATORIES IN REFINERIES

15.16 In the Refineries the departmental laboratory should be located preferably close to the Refinery's own control laboratory so that their laboratory facilities can be availed of, if necessary by the Customs and Excise Chemists.

CONTROL LABORATORY

15.17 Thanks to the foresight of the founder Chief Chemist, it is located on a separate plot in the Pusa Campus opposite the National Physical Laboratory. There are two main buildings for the laboratory. There is also space behind for construction of an additional building. The Committee has favoured elsewhere the separation of Central Excise laboratory and starting a new one in another place in Delhi or Faridabad. In that event more space will be available for the central laboratory for its other activities. The main building will be sufficient for the appellate work and administrative office. The second could be utilised for the opium work. Even now, the Committee has been told that the Central Public Works Department authorities have not handed over the possession of 2-3 rooms which require to be air-conditioned. The accommodation must be made available soon and air-conditioning should be taken up promptly.

15.18 The Control Laboratory being a Headquarters laboratory, the Committee would like it to concentrate on many other scientific activities, such as Research and Development, coordination of the work of the various laboratories, preparing test procedure manual, giving in service training, lectures, conduct seminars and other useful scientific activities.

15.19 The Central Revenues Control Laboratory, New Delhi therefore requires additional space for accommodating:-

1. A library;
2. A well furnished conference hall;
3. A common room for scientists; and
4. A club room and better toilet facilities.

15.20 The Director, Joint Directors and Deputy Directors should have office accommodation facilities befitting their status, as is found in the National Laboratories. There should be a separate building at the entrance for the watchman.

GOVERNMENT BUILDINGS FOR LABORATORIES

15.21 The Committee is well aware of the difficulties of getting good accommodation at standard rent in big cities. But as far as possible the policy of Government should be to have their own building for the laboratory and also make sufficient provision for the expansion of the laboratory for a period of not less than 10 years. The laboratory heads, in consultation with the Collectors in charge, should rationally redesign them in a better manner on the lines indicated above. College type laboratories, with all branches arranged in a big hall will not be suitable for our laboratories. The laboratory should have separate sections and rooms for different types of work and moving space for Chemists, Assistants and Attenders.

15.22 In all our bigger laboratories facilities similar to those suggested for the Control Laboratory should be provided as far as possible so that the officers may feel that their working conditions are being properly looked after.

15.23 GUEST HOUSE :

In the re-organised set up the Central Control Laboratory will have wider administrative and technical work. It will conduct seminars periodically and call for meetings of the Heads of the laboratories, including the Opium and Alkaloid laboratories. The Committee has also proposed inservice training etc. for the officers. It will necessitate chemists and scientists from other laboratories to come to Delhi for participating either in seminars or for training. Even as it is, there is need for guest house accommodation particularly attached to the Central Laboratory and the need will become more acute if our proposals are accepted as there will be greater activity. With the existing accommodation difficulties in Delhi, Officers on transfer or in transit are put to great inconvenience. In the proposals which are made in connection with expansion of office accommodation, provision should be included for guest house accommodation having a minimum of 5 rooms with attached bath rooms.

15.24 OTHER FACILITIES FOR SCIENTIFIC STAFF.

a) All Government and other offices of any size do now have intercom facilities. This saves time and avoids the use of Class IV staff to carry files and messages. The Regional Laboratories and the Central Laboratories should also be given their own inter-com facilities.

b) All Central Excise Collectorates have asked for the service of senior laboratory personnel for advisory work. At the Headquarters of Collectorates, the Head of the laboratory has to be in constant touch with officers on the executive side. It is, therefore, necessary to provide residential phones to the senior officers attached to all laboratories. This is in the interest of greater efficiency. Even Deputy Chief Chemists do not now have the facility of house telephones. With increased status, responsibility and the need for contact with field officers, this facility should be extended to all officers of this rank and above both in the regional laboratories and in the Central Laboratory.

CHAPTER - 16.

OPIUM & ALKALOID WORKS: GHAZIPUR AND NEEMUCH.

SECTION - I

The Central Revenues Chemical Service role in the running of Opium and Alkaloid Works.

16.1 Even though the terms of reference do not strictly cover the Government Opium and Alkaloid factories, the Committee keeping the relevant factors such as nearly 28 per cent of the officers of the Chemical Service are engaged in the work concerned with Opium and Alkaloid and the terms of reference, however, included examination by the Committee of the Chemical Service, service conditions, promotion prospects etc., felt it will be necessary and useful to go into the working of these two factories. Further elucidating the scope of work of the Committee Shri Jasjit Singh, the then Chairman, Central Board of Excise and Customs in the inaugural meeting of this Committee specifically referred to the problems in the Government Opium and Alkaloid Works.

16.2 It has been the policy of the Government to treat the Opium Factory and Alkaloid Works both at Ghazipur and Neemuch as Chemical Laboratories. Except for the Chief Administrative Officer (General Manager or Opium Agent or Deputy Narcotics Commissioner as designated from time to time), the essential operations in both wings of the factories are being managed by the Chemists, save for the house keeping maintenance, engineering and medical services. Even after the formation of the Department of Narcotics and the office of the Narcotics Commissioner in the early 50s, the above mentioned arrangement continued. The induction in this set up of the new office of Chief Controller of Opium and Alkaloid Factories has not materially affected the role of the Chemists - but this has lead to the restriction of the field of operation of the Narcotics Commissioner to some extent. The appointment of an outside Scientist as General Manager in Neemuch has apparently lead to a new line of thinking on the role of the Chemical staff and the jurisdiction of the Chief Chemist Central Revenues. The General Manager, Neemuch feels that the Alkaloid Works is a factory of which he is the head, directly responsible to the Government through the Chief Controller of Factories for certain administrative purposes.

16.3 A brief background reference therefore would not be out of place. The Opium Factory, Ghazipur is of ancient origin. It came into existence when the East India Company assumed monopoly over the cultivation of Opium Poppy and the drying of opium for trade and export purposes. The opium factory in Ghazipur was started about 1820 or so, in the same premises where it stands even today. Even the manufacture of some Opium Alkaloids, namely morphine and codeine in small quantities was taken up as early as 1886 mainly from adulterated opium and its washings. The demand for Opium Alkaloids during World War-I lead the then Government to set up in 1942, an indigenously designed alkaloid plant at Ghazipur under the supervision of the Chemical staff working in the factory. The Alkaloid works was just an extension of the Export and Excise Opium processing operations. The production of alkaloids could not keep pace with the growing demand of the internal pharmaceutical industry and the export trade. Out of the experience gained as well as from the trials and experiments carried out the the innovations and technical ideas for a new plant were evolved and a new Alkaloid works was set up in Neemuch.

16.4 We give below the total number of Chemists employed in Ghazipur and Neemuch and in the Opium Wing of the Central Revenues Control Laboratory, Delhi in 1977-78 under several categories. Nearly twenty eight per cent of the total strength of the Chemists in the Chemical service are working in these three places.

	General Manager (Dy.Chief Chemist).	C.E. Gr.I	C.E. Gr,II	ACE	C.A. I	C.A. II	Total
Govt. Opium and Alkaloid Works Undertaking Ghazipur (UP)	1	2	4	4	17	8	36
Govt. Opium and Alkaloid Works Undertaking, Neemuch (M.P.)	-	-	4	1	8	3	16
Opium Wingh C.R.C.L., New Delhi.	-	-	1	6	6	4	17
							69/249

16.5 It is obvious that the Chemists are directly involved not only in the processing of raw opium till it reaches Excise or Export Standards, but also in the production of alkaloids and in controlling processes and operations during the several stages of manufacture of intermediate and finished products and the research connected therewith. They are also concerned continuously in evolving new methods for increasing the recovery of morphine and the other alkaloids, and also producing the alkaloids from the waste products of the factory. They are also assisting the field staff in troducing better methods of cultivation of opium poppy, collection of opium and in handparakh, weighing etc. The involvement of the Chemists in Opium and Alkaloids is total and it is difficult to draw a distinction between the factory and the laboratory. Both Ghazipur and Neemuch are essentially chemical factories, not dissimilar to a Pharmaceutical laboratory or works where both production and the quality control are handled by Chemists

16.6 The Chief Controller of Factories who met the Chairman towards the end of May, 1979 in Bombay when the drafting of this report was in its final stages, however, agreed with the Chairman's interpretation of the working of the two Opium and

Alkaloid Works and clearly admitted that it is not possible to isolate the processing functions from the testing works and that Chemists are necessary in both the fields.

SECTION - II

Processing of Raw Opium and sampling at various stages.

16.6.1 Import Shed:

Here, Opium received from the District Opium Officers in polythene bags kept inside canvas bags is opened up. A sample of opium in each bag is drawn by using a metallic scooper and the opium in the scooper is taken out of by using fingers. A composite sample drawn from the contents of 8 or 10 bags, as the case may be, is prepared by mixing with hand. The composite sample is tested for consistence (water content) and is the basis of calculation for final payment to the cultivators and also for morphine per cent on dry matter.

16.6.2 Malkhana:

The bags containing the opium in the original form are brought manually to the huge stone vats and the opium in them is emptied into the vats. The bags are stripped clean by the workers using their fingers to remove the opium. The opium at this stage has a water content ranging from 30 to 45 per cent. It is allowed to mix and settle down automatically in the vats. A sliding wooden plank is kept moving over the surface of thevats resting on the edges of the wall and a man can stand over this in order to even the surface of opium in the vats and in mixing it with wooden rods. Samples are again drawn from the vats (with the help of a Bouma made of copper/brass which is a long narrow adjustable cylinder of about 10 ft. in length and about an inch in diameter) to determine the consistency of the opium. The opium gets into the cavity of these cylinder and when the entire cylinder is filled in by opium from all levels of the tank, the cavity of the cylinder is closed and the Bouma is lifted out of the vat. Fingers are again used by the workers for stripping the opium sticking outside the cylinder to make it free from opium and then the cylinder is opened out.

The opium inside the cylinder which is intended for chemical analysis is again removed by using fingers, into suitable receptacles. The contents taken from the Bouma, dipped in the opium in five places in the vat are kept in a container and mixed by hand for taking representative sample for sending to the laboratory for analysis. All these drawing and mixing devices are intended to ensure that the sample sent for test is truly representative of the opium in the vat. From the bigger vats, opium is transferred into smaller mixing vats. This transfer is done by scooping out the opium from the bigger vats and placing it in metallic vessels called 'Tagars'. The opium in the mixing vats is well mixed manually using wooden rods.

16.6.3 DHOIKHANA:

There are a number of stone vats filled with water where the polythene bags, gunny bags, wooden plank containers, etc. etc. smeared with opium are soaked in and cleaned to make them free of opium. In these cleaning operations to recover the opium, the workers use their hands and fingers. The Xhoi thus prepared is sent to the Alkaloid Works for manufacture of alkaloids. During the transportation of Dhoi, hands and fingers of workers are again involved.

16.6.4 ABKARI SECTION:

(a) Opium mentioned in paragraphs 1 and 2 is issued to the "Abkari" Section after weighing in tagars, placed on beam balances, in units 12½ kg. net of opium. Hands and fingers are used by the workers for adding or reducing the opium in the tagars. The opium in the tagars after weighment is emptied into open pans, described in the factory as trays for exposure to the sun to reduce the moisture content in the opium to the required level of 88-90 per cent solid. This takes about two weeks in summer months and about three weeks in winter months. Opium is stirred frequently in depth to hasten the reduction in moisture content. At the end of the drying operation, the wooden trays are scrapped using metallic scrappers and also using fingers.

(b) Side by side with the manual stirring process in wooden trays, an electrically operated mixing/stirring contrivance is used to dry part of the Abkari opium. This mechanical contrivance has short mixing stirrers like fingers and the contrivance runs along to and fro on the long pan. In this pan the use of fingers is eliminated but the mechanical contrivance of mixer-cum-drier has not been extended to cover all the drying pans or trays. If this process is satisfactory, this should be extended to cover all the Abkari opium in pans, thus reducing the use of hands and fingers.

(c) After ascertaining by the sense of touch and feel that the opium has dried to the approximately required consistency, the contents of two individual pans or trays are mixed into one unit called dhundis, weighing approximately 70 kg. This mixing of two or more trays into one, involves use of hand. Samples are drawn from this final mixture of raw dried good opium before conversion into cakes for Excise and Export purposes. But the opium does not stick to the hand to the extent as on the previous occasions. This is largely due to the fact that the sticky semi-solid opium has undergone considerable drying to reach the final stage.

16.7 Preparation of Excise or Export Opium.

The opium brought in trays of approximately 70 kg. is cut into required sizes and weighed and put into polythene bags for export sales. The removal of the cakes, cut to the required size, from the trays and their weighment in the required weight, involves the use of hands and fingers of the workers. But the opium does not stick to the hands and fingers noticeably because of its comparative dryness. These cakes are put into polythene bags or other containers by hand.

16.8 An experienced pharmaceutical technologist should examine all these processes and should devise a contrivance or contrivances which can be operated upon mechanically or electrically, thus eliminating direct handling of opium by workers using their hands and fingers. The possibility of extending mobile mixing contrivance to cover all the trays by suitable extension of overhead transmission lines using, if necessary, more contrivances should be taken up seriously. The present practice is time and labour intensive, and the labourers are continuously exposed to the hazard of opium contamination. The use of hands and fingers, none too clean, at the several stages should be eliminated. The experience gained in Neemuch could be availed of, in making improvements in Ghazipur.

16.9 Alkaloid Works - Opium Extraction Station:

Opium for the manufacture of alkaloids is brought here in four forms -

(i) good opium as is used for export and excise purposes;

(ii) inferior opium which is adulterated opium and is declared not fit for export or excise in the Malkhana;

(iii) Confiscated and contraband opium received in the factory; and

(iv) Wastes and washings called "Khurchan" and "Dhois".

"Khurchan is made by scrapping the floor vats, trays, boxes etc. Washings i.e. Dhois are obtained from the entire floor area, vats, trays and also from other containers like polythene bags, gunny bags, after soaking them in water in the vats in Dhoikhana and drying them as already explained. All these different kinds of raw materials are brought into the manufacturing building in tagars or metallic containers and these are charged into a series of open mouthed, extraction brass tanks. There are about 15 of these open tanks; water is added to the opium in these tanks, stirred mechanically and heated to a mild temperature of about 40°C. In this process of bringing the opium and charging them into the extraction vessels, it is found, workers use their hands and fingers. The extract which is in liquid form, is passed through filter presses under pressure to remove the insoluble matter. Fitting, setting and cleaning of the filter presses which are of the plate and frame type with intervening layers of cloth, is done manually. This liquid. so filtered is stored in vats, and is transferred by automatic suction into vacuum pans from which concentrated opium extract is dropped down into metallic vessels, placed under each vacuum pan. This concentrated opium extract from the big reseptacles is lifted in buckets by dipping them into the vessels; the buckets are carried manually once again to the mixing tanks, for a process of treatment with calcium chloride and calcium carbonate and dilution with water. Thereafter it goes through a filteration process and comes to the vacuum pan as before, involving once again manual handling. At the end of this set of processes a concentrated solid mass is obtained, which is cut into cakes, called crude alkaloid cake.

16.10 These cakes are then manually transferred to centrifugal vessels lined with cloth. The process hereafter can be considered as similar to the process of separating molasses in sugar factories. But unlike in the sugar factory, handling by fingers and hands is resorted to for removing the solids adhering to the sides of centrifuges and removal of the mother liquor, which is received in a container kept on the side of the machine. The crude alkaloid cake in cloth bags is listed to the morphine - codeine separating section where the separation, crystallisation and purification of the alkaloids are done in open vessels and in open steam jacketed pans. This perhaps fouls the atmosphere inside the process house.

16.11 The semi-refined morphine and codeine, obtained after processing, are dried on open steam tables. The handling here, is done manually. The drying, powdering and packing of the alkaloids are also done by hand. In these operations quite a lot of dust, ladden with alkaloid particles pollute the atmosphere and this dust is inhaled by the workers and Chemists affecting their throats, noses, and bodily systems.

16.12 The next process is the preparation of finished drugs of pharmaceutical standards where considerable amount of sieving is done, either in metallic sieves or by use of thin muslin cloth. The workers use their hands even to mix the codeine and morphine in the sieve and musline cloth which habit will affect their health in the long run. Similar situations exists where narcotine, synthetic codeine, codeine salts and dionine are manufactured. To ward off this pollution, masks are to be worn by the workers to cover their noses and mouths but in practice this is not observed. Sugar for consumption on the spot is given to those workers who powder, sieve and pack alkaloids to reduce the bitterness in their mouth due to dust inhaled through their noses and mouths.

These observations would also apply in respect of the section where opium power I.P. and opium cake I.P. are manufactured.

16.13 All the above mentioned processes and operations are necessarily to be examined by a competent health specialist and pharmaceutical technologist. We discussed this matter with the Director and senior scientists of the Industrial Toxicology Research Centre, Lucknow, during our visit in April, 1979. The scientists agreed to undertake a study of the Toxicology problem in the Ghazipur factory and suggest suitable remedies if a project is officially assigned to them.

16.14 The machinery in use in the entire system of alkaloid works was devised and designed four decades ago. Improvements have been effected by improvising from time to time. In view of the very large financial interest involved in the production and sale of medicinal opium and alkaloids, it is desirable that the entire manufacturing processes is surveyed by a competent technologist and modern equipment should be installed. Agencies like the Central Drugs Research Institute, Lucknow, Indian Drugs and Pharmaceutical Ltd. or their foreign collaborators may be able to help. The defects and deficiencies that have come to the notice at Neemuch can be made good if a proper pilot plant study is made. Such modernisation will definitely improve the productivity, reduce pollution and health hazards to the workers and the chemist working there and would, in the long run bring about considerable economy in expenditure, increase in production and diversification of activities; after modernisation, the staff rendered surplus can still be engaged without any fear of retrenchment since this will generate further activities in other parts of the plant.

16.15 The whole factory presents an out-dated appearance. From what might have been a small laboratory plant scheme, the factory has expanded without benefit of modernisation, which is essential in the manufacture of these dangerous drugs.

SECTION - III

RESEARCH ACTIVITIES IN GHAZIPUR.

16.16 In the quality control section in the Alkaloid Works, Ghazipur analysis of intermediate products for process control is carried out side by side with the testing of finished alkaloids. There is no separate modern process control laboratory as in Neemuch. The Chemists are doing the work by conventional methods and sometimes, help of outside laboratories is also sought. There is no electronic panel room to watch the processes so as to operate by remote control. Inspite of the fact that the work in the alkaloid works in Ghazipur being managed by simple contraptions with manual labour, there is a research wing which has contributed in solving scientific and technological problems of the factory and the poppy growing fields. Scientific papers in Indian and Foreign journals have been published. The following are some of the problems claimed to have been tackled by the chemical staff at Ghazipur.

i) Efforts are being made to improve the recovery of morphine from opium and synthetic codeine from semi-refined morphine.

ii) A method has been evolved for recovery of thebaine from lime residues of crude alkaloid cake mother liquor. (A scheme to produce 300 kg./annum of thebaine is already under the active consideration of the Chief Chemist/ Chief Controller of Factories). This scheme is entirely based on the work conducted here in the research wing of this alkaloid works and in the Control Laboratory, Delhi.

iii) Studies are being carried out to replace benzene by suitable solvent as it is toxic resulting in health hazards.

iv) This wing is studying the analytical aspects of morphine, codeine and thebaine with a view to evolve a quick and accurate method of estimation of these alkaloids. Some compounds of these alkaloids with chlorides of iron, cobalt and nickel have been isolated and characterised; their structures are being determined by ultra violet visible spectra and other physico-chemical methods.

v) Development of a method for classification of opium (determination of consistence) with the help of a specially designed and fabricated hydrometer is under active study/experimentation. If found successful, this method can be implemented in opium growing districts instead of the present hand parakh of opium carried out by district opium officers.

vi) Estimation of narcotine in Indian opium and a technological process for the recovery of narcotine from opium marc, a waste product, was evolved which helped to open a new section for production of Narcotine B.P. Two papers were published on this work.

vii) Recovery of papaverine, thebaine and cryptopine from the crude alkaloid cake mother liquor was worked out and paper published.

viii) Study on the absorption of opium and morphine by porous earthen pots during collection of opium was studied and suggestions made to use non-porous containers made of aluminium or plastic or covering the surface of the porous earthen pots by thick polythylene sheets, in which the opium is to be stored. This has resulted in effecting saving of potential morphine in the opium collected in the field

ix) Hydrogenation of codeine and thebaine and their derivatives were made and paper published.

16.17 The Research carried out over here is mostly production oriented. The Research Wing here is very much inadequately staffed and equipped while in the parallel alkaloid works unit at Neemuch, according to the approved scheme, the Research Wing is to be adequately equipped, staffed and headed by a Research and Works Chemist. It will be desirable to modernise the facilities here as soon as possible in view of Ghazipur's historic associations with opium.

SECTION - IV

OPIUM : PROCESSING AND MANUFACTURING
OUR REVIEW OF THE OBSERVATIONS OF THE
SHIV NAUB SINGH COMMITTEE - 1970.

16.18 Some of our earlier observations about the out-dated methods of handling opium and drawal of samples at several stages have also been referred to in the report of Shiv Naub Singh's Committee on Reorganisation of the Narcotics Department submitted in 1970.

The Shiv Naub Singh Committee has critically examined the drawal of samples at the initial stages and it had observed that it is not necessary to take samples for test at all, except at the final stage of preparation of cakes for export or excise sale. However, the practice has continued unchanged. Chief Chemist, Shri D.R.Gupta who has knowledge of these questions felt that on two counts the test at the initial stage of import shed is very necssary:

(1) Primarily, it is necessary to know the quality of opium received so that it should be possible to decide which opium is to be taken to the alkaloid factory for processing. It is common knowledge that opium, containing high morphine, is preferred for alkaloid manufacture.

(2) Further it would help the factory to know area-wise the quality of opium received by the factory. Dr. V.S.Ramanathan, another member of the Committee also expressed similar views. However, they also feel that it may not be necessary to test every 10 bags for morphine content and that it can be done on 100 bags basis. This has been followed in Ghazipur for the past one year. It is seen that codeine strength is determined on district opium samples. This test does not appear to be done regularly at Neemuch. It is suggested that there should be uniformity of procedure at Ghazipur and Neemuch.

16.19 Regarding the antiquated methods still in vogue the Shiv Naub Singh Committee has many observations which we take the liberty to quote in extense, as that Committee had dealt with this subject in greater depth. These observations only strengthen our own impressions.

> MALKHANA
>
> "10.13 The current practice of storing opium in the Malkhana in large masonry vats is far from satisfactory. Apart from the fact that it is extremely difficult to conduct physical verification of the stocks of opium held in vats at any given time, the pouring into and removal of opium from the vats becomes a very messy operation. The workers virtually wade through masses of viscous opium which gets splashed all over their bodies and on the floor and the walls, thus involving considerable loss and wastage. No attempt appears to have been made to provide better type of containers which could be easily operated upon and their contents measured. The best solution would be to introduce large metal containers duly calibrated. But if this is likely to prove expensive, there is no reason why the floor and the inner walls of the existing storage vats cannot be lined with aluminium or given a polished surface like that of marble mosaic which would be easier to scrap and clean for recovering the opium. If the vats/containers are duly calibrated, it should be possible to obtain an approximate idea of the quantity of opium stored on the basis of its volume after making due allowances for variations caused by fermentation, etc. The current practice in vogue at Ghazipur of using coaltar for painting the walls of the rooms and the outside of the vats in Malkhana is open to objection. Since the colour of the coaltar is almost the same as that of opium, often splashes of coaltar are indistinguishable from that of raw opium. If any insecticide or preservative against white ants, etc. is needed, it should be possible to use some other suitable substitute of a distinct shade or colour".
>
> "10.14 Similarly, mixing of opium before it is issued to the Abkari Section should be done in movable metal containers and not in fixed cement vats which suffer from the same drawback as those of the larger vats. Movable containers can be easily taken to the vats which are to be emptied, thus avoiding loss of opium in removing it to fixed mixing vats".

DHOIKHANA

"10.15 The building in which opium sticking to gunny bags, polythene sheets, clothes and other articles is recovered, by using water as a solvent, is known as "Dhoikhana." The aqua solution of opium so salvaged is known as "Dhoi", from which opium is recovered by evaporation. Because of the low roofs of the Dhoikhana buildings and the smell of the aqua solution, the place becomes very un-hygienic and difficult to work in, especially during the summer. We would suggest that roofs should be provided at appropriate levels and fitted with exhaust fans. It would also be helpful if the layout of the different tanks allows for automatic flow of opium solution from one tank to another. These reforms would provide better working conditions and obviate the need for manual transfer of Dhoi from one tank to another."

ABKARI.

"10.16 While the improvements suggested for the Import and Malkhana sections of the factory do not involve any great technical problems, the Abkari Section affords maximum scope for modernisation and introduction of improved production techniques. The existing process of stirring the opium manually and drying it in the wooden trays by exposing it to solar heat for weeks suffers from serious drawback. Every evening these trays are covered with corrugated sheets, which are again removed in the morning, for protecting them from dew or rain during the night. Besides all these operations being highly labour intensive, handling of a precious commodity like opium by hundreds of labourers exposes it to considerable wastage, risks of loss and unauthorised removal. Solar drying in open wooden trays also exposes the opium to contamination by dust, dirt, birds, etc."

16.20 Having these observations, this Committee thinks that all these deficiencies can be greatly reduced by the use of suitable mechanical stirring and drying equipment which would be far more economical and efficient. Heating in enclosed vessels with proper temperature control for drying purposes would reduce the dependence on solar heat, which causes helpness because of vagaries of weather. Presently, during the monsoon or inclement weather when solar drying is not possible, the labour is rendered idle or is under-employed. We were happy to see electrical cum steam contrivance for drying had been attempted in the Neemuch Factory on a limited scale with encouraging results. An experienced officer expressed his doubts about the efficacy of rapid heating and apprehended that morphine content may get affected by this process. However, the Committee feels that as it has been operated successfully in Neemuch it can well be tried at Ghazipur also. This point is a matter to be studied by an institution like the National Chemical Laboratory. Further, the design of the trays used in the Abkari Section can be improved greatly by lining them with thin metal sheets of aluminium. This would facilitate their cleaning and scrapping and prevent losses by absorption and leakage through joints, cleavages etc.

16.21 Linked with the above are so many problems of research and reform. Some of these were mentioned in Shiv Naub Singh's Report.

i) Reducing the loss on account of deterioration of morphine content during storage from the stage of collection by the cultivator to its delivery to the Government and during subsequent period of drying and processing. This should include evaluation of the use of polythene sheets as a preserving medium.

ii) Improving the methods of assessment of moisture and morphine content, detection of adulterants etc.

iii) Introduction of suitable packing materials, containers etc., which would cause minimum loss by sticking, leakage, bursting or other factors. This should also include a study of suitable packing material for transport by air.

iv) Studies on the commercial exploitation of poppy seed for chemical or industrial uses."

16.22 It has not been possible for the Committee to ascertain the nature of the action taken in the Ministry and the Narcotics Department on the various recommendations made in the report. The object of quoting these paragraphs in extensive is to high-light their continuing relevance even now. Some of these remedies which do not involve scientific apparatus do not also appear to have been tried though there has been a Department of Narcotics working for the last 25 years. We would have liked to discuss these with the Chief Controller of Factories. Whenever the Committee invited him for discussion he was not able to attend. The Chairman however met him at Bombay on 21st May when the report drafting was almost complete. He could not throw much light to clear our doubts.

MANUFACTURE OF ALKALOIDS

16.23 We were again taking the liberty of quoting from Shiv Naub Singh report, some important observations on the manufacture of alkaloids.

> "10.18 In the Alkaloid Works at Ghazipur, opium alkaloids are manufactured by the "Robertson Gregory' process which consists in digesting the opium several times with water and treating the concentrated opium solution with calcium carbonate and calcium chloride to remove the impurities. The solution is further concentrated to obtain crude alkaloid massecuits of crude morphine and crude codeine hydro-semi refined morphine and semi-refined codeine (natural) are then separated and purified. The insoluble opium left behind (marc) is further treated for the recovery of narcotine. Although, considerable improvement has been achieved in the recovery percentage of morphine present in the raw opium, (the present rate of recovery is between 75 per cent to 78 per cent), it is still very much below the standards obtaining in other countries. The processes employed in Europe and America are reported to yield a recovery of 99 per cent. Further, the equipment in use at Ghazipur has outlived its normal life and needs to be replaced or renewed."

> "10.21 In the morphine manufacturing section the purification of crude morphine and crude codeine (natural) is done on open large sized steam-jacketed pans. Apart from the excessive humidity caused by steam heating, the hot organic compounds pollute the atmosphere. In foreign countries such concentration for crystallisation of alkaloids is done in closed vessels under vacuum, which not only avoids the circulation of organic compounds in the air but also prevents the loss caused by the oxidation of morphine. There is thus a case for introducing closed steam-jacketed pans in place of open pans."

16.24 The Shiv Naub Singh Committee made some useful observations about improving the testing methods and use of up-to-date apparatus. We quote below from para 10.12 of that report.

> "10.12 During the discussions with the scientists of the National Chemical Laboratory, the Committee were informed that modern instruments are now-a-days available for qualitative analysis of the raw materials and finished products. In this context Gas-liquid chromatography for alkaloids, alkaloidal salts and their derivatives is playing a dominant role. Installation of Infra-red spectrophotometer, and Ultra-Violet-Visible Spectrophoto-meter provide complementary data for purposes of quality control. Besides, thin layer chromatography is a cheap and efficient technique for qualitative evaluation of samples. We were also informed that Varian Aerograph Model - 1200 costing about $ 2,500 would be more than adequate for giving quick and accurate analysis of morphine content of opium samples. The Committee recommend that with a view to remove the existing delays and other deficiencies of the prevailing system and in the interest of promoting efficiency and better quality control, immediate action should be taken to examine the feasibility of introducing these sophisticated techniques."

16.25 Our scientists/colleagues agree with these views and in our recommendations for equipment for these laboratories, we are making necessary provisions (Chapter 13).

16.26 The recovery percentage of morphine is to be noted as 75 per cent to 78 per cent in 1970 in the report whereas in Europe and America it is 99 per cent. The present position of morphine recovery is less than 80 per cent. We are informed that this low percentage of recovery is due to the absolete process that is being followed in Ghazipur in the extraction of morphine. This needs rectification.

16.27 Loss in Storage:

A related and perhaps a more important aspect from the control point of view is loss in storage and processing of opium. This has been gone into in great detail by a Committee set up in 1967 called the "Opium Losses Enquiry Committee Report" but it is not known whether their recommendations were followed up for implementation at all. To determine whether a loss reported in a year is normal or abnormal, there must be a norm. To fix a norm, a series of weighments and tests should be undertaken in controlled conditions. This Committee suggested this: but no experiment under strictly controlled conditions was undertaken by the factories. As our Committee has not been informed that such experiments were done in the recent past, it is obvious that no acceptable norm could be arrived at. Prompt action is required in this regard.

16.28 Commercial Accounting:

There is at present a system of commercial accounting and an Accounts Department with a Cost Accountant also. As this is strictly beyond the terms of our reference we have not gone deeply into this question. But "loss" in a scientifically controlled and managed factory dealing with opium which is a dangerous and valuable substance is a matter which would not be ignored. This is also closely related to the work of testing samples at different stages by chemists for consistence and morphine content.

16.29 We tried to ascertain from the Departmental officers whether the scientific and accounting controls are effective. The accounting control is itself related to scientific control as raw opium with high water content and low morphine content, undergoes processing and has to be correctly converted at subsequent stages when it attains higher consistence of 88° to 90° and higher morphine content. Opium received in the Import Shed is weighed and actual moisture content is also ascertained. For uniformity of accounting the weight is converted as if the moisture content is 30 per cent (consistence 70°). The aim of any internal scientific or statistical control should be to ensure that this opium is eventually fully accounted for when it is dried and brought to 88° to 90° consistence. The Chemists said that the object of testing at various stages is to ensure that this correlation exists between the increasingly drier opium acquiring higher consistence and the original opium received with higher water content.

16.30 With a view to obtain fuller information justifying,

1. the four tests at different stages; and
2. the system of correlating the accounts i.e. balancing the weight at the notional rate of 70° consistence with the weight of prepared opium at 90°, the Chairman posed a series of questions to the two opium factories and held further discussions with the Chief Chemist and the ex-Chief Chemist at Delhi and the concerned officers at Ghazipur during [illegible] visit. The explanations obtained are summarised below:-

16.31 These samples are taken for the following tests in the laboratory.

1. Consistence.
2. Purity test - presence of starch, gum, tannin, sugar, and mineral matters.
3. Percentage of anhydrous morphine on dry matter (morphine content)
4. Percentage of anhydrous codeine content on dry matter (codeine content) after suitably compositing the challan samples.
5. Percentage of oil.

(The standing orders/authority for the above is contained in section III and IV of Chapter III draft opium manual Vol.III).

16.31.1 The following are the objectives of the first test on receipt of opium in the import shed.

a) Quality control over the raw opium. By these tests strict quality control is exercised over the raw opium which is received in the factory. Any adulterated opium if detected is segregated and stored separately.

b) By the consistence determination the proper accounting of the quantity of opium at 70° on receipt is exercised as all the factory records are maintained at 70° consistence. This test also enables the correct payment of the price of opium to the cultivator for which also the quantities are computed at 70° consistence.

c) The morphine and the codeine content determinations enable the assessment of the quality of opium in terms of potential alkaloid content. We agree that these tests are necessary.

The 2nd Stage.

Where raw opium stirred and mixed is carried from vats to trays for drying - the test is only for consistence and for balancing of accounts of issues from one section to another at the rate of 70° consistence.

The 3rd Stage.

This is also for inter-departmental balancing of accounts. This step has been dispensed with now, except in the case of one foreign party who still insists on tray analysis and whose sampling is still done abroad.

The 4th Stage (Export).

Opium is already packed in chests. A sample is taken in triplicate and in order to comply with buyer's requirements and for necessary certification. The tests are for consistence determination and for the estimation of the percentage of anhydrous morphine. These are necessary for the preparation of export provisional invoice A duplicate sample is sent to the Chief Chemist, Central Revenues Control Laboratory, Delhi for analysis. The final invoice is prepared on the basis of the Chief Chemist's test report. This procedure is governed by appropriate orders issued by the Board from time to time. Thus in addition to the test in the Ghazipur laboratory, a double check is exercised by a superior authority.

16.32 The efficiency of the present system of control is however a matter which needs an indepth study. The first entries are of raw opium converted in terms of 70° consistence. What is issued to the alkaloid factory or to the export caking side has different consistence and these should be properly balanced and the difference in terms of weight and moisture content between the import stage and the final stage has to be reconciled. The loss in moisture and increase in consistence must be evenly balanced.

16.33 The Committee addressed further queries for clarification. The relevant information received from Ghazipur is summarised below:-

i) Import opium is receipted in Malkhana Section at 70° consistence though the actual figure may be somewhat less and in Abkari Section where the opium is processed and manufactured for export and excise opium, the account of opium is maintained at 90° consistence. (Notional figure obtained by conversion)

ii) Since the figures are obtained by conversion, the actual difference in physical weighment is not recorded by Accounts Department and the question of reconciliation between the two figures does not arise and thus no statement is prepared by the Accounts Department.

16.33.1 The Sales Manager further explained during the second visit of the Chairman to Ghazipur, that the accounts are settled when the vats get exhausted and that the loss between notional and the real weight is settled by writing to the Ministry. The difference at the most in all these cases is stated to be about one per cent. Even if it is more, reasons for the difference are explained and the accounts settled by condoning the loss. In this way the accounting of opium is maintained.

16.34 The majority of the members of the Committee are not fully convinced that inspite of tests at third and fourth stages for consistence and morphine content, the correlation between the physical weights at various stages is correctly accounted for by increase in consistence and improvements in morphine content. Without acceptable norm in both cases, no accounts check can be foolproof. The weighment and recording them in accounts when opium moves from one stage to another is purely for balancing of departmental accounts. The members are not convinced that such balancing in terms of converted consistence serves any purpose. It has not been explained to us that the variation in morphine content at subsequent stages are the results of drying or due to any other factors. The Chief Chemist explained that the testing for morphine and codeine content in the initial stage is helpful in identifying the areas which produce better opium. As during the processing stages considerable mixing takes place, there can be no correlation between the morphine and codeine content ascertained at the final stage with the results obtained on initial test as no attempt is made to process opium with better alkaloid content separately from other ordinary opium. In such circumstances identification of areas which produce better opium is not possible. In the absence of controlled experiments for fixing norm, the balancing of accounts and writing off of the differences are also exercises in futility. The accunts officer or the Chemist has no control over weighments and in the practice of adopting notional consistence no foolproof accounting is possible. Some kind of a double check is necessary at the initial stage and at the stage of transfer to the cake making section. This is largely an administrative matter and deserves careful study by the Controller of Factories. That all is well because of the security arrangements is no justification for allowing procedures whose validity has not been fully explained and justified.

16.35 These observations on Accounts Control were explained to the Chief Controller of Factories on 21st May, 1979 in Bombay when he called on the Chairman. While largely agreeing with our observations he promised to examine the matter further and send a note to the Committee. It is a matter for regret that the Chief Controller of Factories and Narcotics Commissioner has failed to report to the Committee as promised.

16.34.1 In the absence of convincing arguments, Chairman and majority members of the Committee are still left in doubt whether all the opium received in a season with varying moisture content has been duly converted into Excise or Export opium; and whether all the opium transferred to the manufacturing section has similarly been accounted for by alkaloids, intermediates and waste products. All that we can now recommend is that the Central Drug Research Institute, Lucknow or any other competent body may be asked to study this as a project and suggest norm and other measures, to ensure that scientific and accounts checks serve the desired purpose.

SECTION - V

OPIUM AND ALKALOID WORKS : NEEMUCH.

16.36. Broadly the opium and alkaloid works, Neemuch can be divided into three sections:

i) The Opium Factory.
ii) The Alkaloid Works.
iii) The Research and Development Wing.

In the opium factory there is an analytical laboratory in which at present five Chemists are employed. The procedure for drawal of samples at various stages is very much similar to the practice in Ghazipur. All our observations in respect of Ghazipur apply to Neemuch as well and therefore we do not deal with these in detail once again here.

16.37 At the time of our visit, we found a backlog of about 12,511 bags of opium as on 16.2.1979 belonging to the last season still to be processed. This backlog has resulted because of the substantially heavier last season's crop. There are only three vats of 18' x 7' x $7\frac{5}{6}$' for emptying the opium for mixing purposes. These three vats can hold about 100 M.T. of opium. The remaining quantity of opium will have to be kept in the storage rooms. Construction of few more additional vats is very necessary, and the suggestion of the Shiv Naub Singh Committee regarding the type of storage facilities should be considered in this context.

16.38 ALKALOID WORKS:

The Alkaloid Section with its completely mechanised plant, it was hoped would be a tremendous improvement on the purely laboratory style processes adopted in Ghazipur. Dr. Madhavan Nair, Member of the Committee in his note has given a critical appraisal of the plant which is reproduced at the end of this Chapter.

16.38.1 There is a separate process control laboratory for testing the raw materials, intermediary products, and finished drugs as well as the various stages in the process of manufacture. In addition to this laboratory, in the original plan for setting up of the plant, provision was made for a Research and Development laboratory. Building was designed and constructed and now it is ready for working. During the last few months these two blocks have been furnished and some equipment have been stated to have been purchased for the process control laboratory. The Research and Development Wing at present has only two chemists and the process control laboratory has also one or two chemists drawn from the other parts of the plant. The Government of India presumably on the advice of the General Manager had approved of a scheme for full staffing of the Research and Development laboratory and the process control laboratory as given in the appendix to this Chapter.

16.38.2 We were told that recruitment of Chemists for Research and Development and process control laboratories has been made. But at the time of our visit much of the work was done by the officers drawn from the Revenue Chemical Service.

16.39 Process Control:

We asked the Chemists who are working there since the commencement, as to what is the nature of process control exercised in this completely mechanised plant. There is a provision for instrument panel control room to watch the reaction, temperature, pressure etc. But this does not appear to be working. The process control also involves periodical analysis of the intermediate products. We have not been able to obtain any useful information regarding how these controls are going to be exercised. A competent specialist, preferably the scientist who designed the plant should advice their use on the process control methods and techniques.

16.40 **Research and Development:**

The main problem in the production of alkaloids is the morphine recovery has come only upto 81-82 per cent. The designers of the plant and machinery and the National Chemical Laboratory, Poona foresaw that production of morphine would ultimately reach the stage where the recovery will be not less than 90 per cent. That day seems to be far off. Any research project should be so designed to find ways and means of avoiding this waste and of increasing the morphine recovery and also recovery of other alkaloids like codeine (natural/synthetic), thebaine, narcotine and papaverine and their salts etc. After our visits to the factory and discussions with the Chemists and the General Manager, in reply to a further communication from the Committee, the Administrative Officer, Neemuch, enumerated the following as some of the research programmes undertaken there under the guidance of the Research and Works Chemists who have been drawn from the Revenue Chemical Service:

1. Thin-layer chromatography technique was developed and usefully employed for monitoring the methylation operation in synthetic codeine section.

2. Recovery of codeine from 'C' filterate.

   A process for the covery of S.R.Codeine from resinified mother liquor obtained in synthetic codeine section after third crop was developed. This process is being successfully employed on the plant scale with synthetic codeine Section.

3. Stability of methylating reagent.

   The moisture content is methylating reagent was studied and estimated with the help of Karl-Fischer potentiometeric titration apparatus.

4. Study on optimum conditions for the recovery of morphine from mother liquor using cresol is in progress.

5. Recovery of S.R. morphine from washings of S.R.morphine using ion-exchange resin is attempted. Preliminary work for recovery of morphine from the washings of S.R.morphine using ion-exchange resin (ICR-50) imported from Mallinckrot Chemical Works U.S.A. has been carried out.

6. Manufacture of Crude Thebaine.

The method suggested by the National Chemical Laboratory, Poona for extraction of thebaine from alcoholic mother liquor, left after extraction of codeine, did not work. A new method was developed in this section and the same is now being followed on the plant scale.

7. Purification of crude thebaine.

Experiments are being carried out to develop an efficient process for the purification of crude thebaine.

8. Separation of narcotine and papaverine.

A process has been developed for the separation of narcotine and papaverine which is being successfully utilised on the plant scale.

9. Studies on deterioration of morphine in opium.

In the last season, some experiments to investigate the deterioration of morphine in the opium from the field to the factory were undertaken. It was observed that a great percentage of morphine was lost from fresh latex to sun-dried stage. Our preliminary studies indicate that this deterioration is perhaps due to some photo induced reaction or probably by ultra-voilet radiation in addition to other factors already reported."

SECTION XVI

THE CENTRAL REVENUES CHEMICAL SERVICE OFFICERS' CONTRIBUTIONS AND THEIR GRIEVANCES

16.41 The representatives of the Chemical Service Association Neemuch Branch met us and expressed their apprehensions about their future in the light of recruitment being done through the Union Public Service Commission for certain posts in this plant. In this connection the Committee would like to refer to their representations which was forwarded by the Chairman of this Committee to Shri Jasjit Singh, then Chairman of the Board of Central Excise and Customs. During our discussions in Neemuch we put it to the Chemists, as a matter of general hypothesis, that Process Control and Research and Developments are new openings in Neemuch and that the Central Revenues Chemical Service Officers cannot claim these new posts as a matter of right, and these new appointments will not deprive them of any opportunity which they enjoy at the movement. If new projects are undertaken, it is open to the Government to recruit scientists with special competence to carry out such projects. When this point of view was put to the chemists they emphatically asserted that the whole conception of this plant came from several officers of the Chemical Service and they mentioned the names of a few. They enumerated their contributions towards building up of the Alkaloid Works Neemuch and its current working. These are given in Annexure XVI A. If it is so it is only fair that these contributions are properly recognised.

16.42 Further these officers stated that "the method of maintaining the manufacturing accounts of the various alkaloids produced, the opium charged into the process and maintenance of the stock register were also introduced by the Central Revenues Chemical Service personnel working in this plant based on their experience in Ghazipur."

16.43 "They also pointed out that when the National Industrial Development Corporation left the plant, the recovery of S.R.morphine was between 46-76 per cent and that of S.R.codeine (natural) was in the order of 1.68-24.6 per cent and the quality of the semi-refined alkaloid produced was also of a very low standard. The Central Revenue Chemical Service personnel posted in this plant along with the plant superintendent (an ex-Central Revenue Chemical Service member) under the then General Manager took over the task of improving the overall performance of the plant and raised the recoveries of S.R.morphine and codeine to the present level of 80-82 per cent."

16.44 Regarding Process Control and Research and Developmen the very fact that provisions were made for these two in the original plan itself, which was conceived about 6 to 7 years ago, is positive proof that these ideas were already worked out by the officers of the Revenue Chemical Service and if th are now actively associated with them, they would develop definite policies for pursuing research on these lines with the objective of making the plant more efficient and make the research properly correlated with the objective of the plant, namely to produce better results.

It is apprehended by the Chemical Service Officers who are at present working here that they would revert back to the Revenue Chemical Service.

16.45 Process Control and Research Wings as a separate entity - Recruitment of Officers.

If these two wings are to be developed as completely independent of the Central Revenues Chemical Service, it should be made clear to the new appointees who are selected through the Union Public Service Commission they must find a self contained career in these two wings of the Neemuch plant only. It would be exceedingly prejudicial to the interest of the chemists who had devoted their time and energy to develop this plant and who have been useful generally in various other laboratories, if these newly recruited younger officers probably with better academic qualifications are required to be absorbed in the Central Revenues Chemical Service at a later stage at levels appropriate to the pay scale and classification presently given to them. It is a matter for Government to consider whether a few officers of a comparatively young age, recruited as Class-I Officers at higher levels of pay with a short span time-scales will find in the long run service conditions satisfactory; and it would be a sad day if these officers begin to drop out one by one. It is the considered view of this Committee that whatever staff is required for the new developments in this factory can be drawn from the Central Revenues Chemical Service.

16.46 The question arises whether the Chemical Service has enough talent to do the kind of work that is contemplated. In the opinion of our Scientist Members such talent is available. Even now the officers of the Revenue Chemical Service are doing this work. The present General Manager's emphasis on organic chemistry with high academic degrees and the credit of having published papers in technical journals, in the opinion of the Committee is not relevant for the nature of the work performed by the chemists. As already explained Revenue laboratories do many organic analysis, which will keep this in good stead to work in these two factories at any time of the career.

16.47 It has been elsewhere mentioned (Chapter 13) that the work in this Department has not been organised in a manner to encourage officers to do research work and publish papers, save very few exceptions. It could be argued that officers of talent and aptitude, inspite of the hard work and longer hours, will some how or other find time to do research work and publish papers. But under conditions generally existing in Government service, apart from National laboratories and Universities, such opportunities are rare and very few people take the [illegible] to do research and publish papers against heavy odds of long hours of work and lack of encouragement.

FRUSTRATION AMONG OFFICERS.

16.48 The impression, the Committee gathered during discussions with the officers of the Revenue Chemical Service at Neemuch, is that they are primarily worried about the recruitment of outside scientists through the Union Public Service Commission to the scientific posts in the process control laboratory and in the Research and Development unit at Neemuch. It has been mentioned in para 16.2 that this new line of thinking has been probably due to the appointment of outside scientist as General Manager in Neemuch. These officers pleaded that the analysis carried out in Customs and Central Excise laboratories is not mainly compounding work, but it involves a very complex examination to find by qualitative and quantitative analysis and by use of instrumental analysis a composition of various sophisticated products which are being placed in the market, particularly in the field of petro-chemicals, plastics, paints, man-made fibres etc. They also emphasized that the chemist during the course of duty is required to inspect many factories not merely for drawal and check of samples, but also to observe factory processes and the amount of chemical control that is being exercised through the control laboratories which most factories have. Later when the Committee met the General Manager all these points were brought to his notice. He informed us that he is asking for a batch of Central Revenues Chemical Service Officers for the 2nd shift when it is to be introduced.

16.49 The chemists in the service when confronted with the question why they did not apply to the posts advertised by the Union Public Service Commission, came up with the rejoinder they are doing actually this kind of work satisfactorily and nothing wrong has been found with their erformance. They also feel, that a body like the Union Public Service Commission will be more impressed by higher academic qualifications like doctorates or training in foreign universities or foreign institutions and by people from younger age group. There appears to be some substance in their argument. Though it may be too late in the day to upset steps already taken we would strongly urge that whatever posts are not being filled by Union Public Service Commission for these two wings, candidates should be drawn from the existing chemical service. The Committee recommends that the Chief Controller of Factories should be given a free choice to choose his men from amongst the largest number of volunteers from Central Revenues Chemical Service for these posts if they are to be isolated altogether, or from the entire service if this plant is to run as an integral part of Central Revenues Chemical Service as at present.

PROPER COURSE FOR CREATING OF NEW POSTS.

16.50 Taking all the circumstances into consideration it is suggested that for any new post that may be necessary either for this plant or any other similar plant under contemplation, it would be advisable to create posts in the service itself at appropriate class and levels. A Committee can be constituted with the Chief Chemist, Central Revenues and the Chief Controller of Government Opium and Alkaloid Works and a nominee of the Board to select the candidates from Central Revenues Chemical Service to fill these vacancies.

SCIENTISTS' VIEW ON RESEARCH FACILITIES IN SMALL LABORATORIES.

16.51 In this connection we would like to record here the advice we received from Dr. S.Varadharajan of Indian Petrochemicals Corporation Ltd., Prof. Sampat, Member, Union Public Service Commission and officers of the Science and Technology Ministry and some other eminent scientists that research projects of this nature require higher level of talent and much better laboratory facilities which a small plant like Neemuch can never afford. They suggested identifying the problems and then handing over the work to well equipped outside laboratories viz. Universities, Indian Institute of Technology, National Chemical Laboratory, Central Drug Research Laboratory etc. It is interesting to recall here that even a multi million industrial complex like Indian Petro Chemical Corporation Ltd is having some of its research done by outside laboratories like National Chemical Laboratory, Poona, Regional Research Laboratory, Hyderabad, Regional Research Laboratory, Bhubaneshwar; Institutes of Technology; Bhaba Atomic Energy Establishments, Trombay, as well as other university/ departments such as the Indian Institute of Science; Sardar Patel University and M.S.University of Baroda.

Having said all these we will certainly emphasise the need for a properly equipped process control laboratory with competent electronic facilities. The Central Revenues Chemical Service Chemists will be quite adequate for handlin the work, in the Process Control Laboratory.

CRITICAL SIZE:

16.52 There is what is known as the critical size in industrial production units. Units of smaller size become uneconomic and units above the critical size can increase production at a faster rate and improve technology. In the same manner a Research and Development unit has also a critical size. Below the critical size the Research and Development teams of scientists are likely to become ineffective. The Research and Development units of such size cannot attract and retain scientists of talent for whom there is a great demand. Scientists in smaller teams become frustrated and research suffers and they are eventually likely to be use in normal production work and quality contr defeating the very purpose for which the research unit is

Before more money is spent and more scientists are employed in Research and Development either in Ghazipur or Neemuch, the advice of the Science and Technology Ministry may be sought and a team of scientists working in the Drug Industries may be asked to study the problem in depth and recommend whether a separate Research unit for opium and alkaloids should be set up either in Neemuch or Ghazipur or the work be taken over by an outside larger specialised institution.

We have examined these requirements of Neemuch for Research and Development and our findings are incorporated in the list of equipment necessary for various laboratories (Chapter 14). Regarding Neemuch the consensus of opinion amongst our scientist members is that equipment like Nuclear Magnetic Resonance - costing Rupees 8 to 10 lakhs are unnecessary and will not be put to purposeful use in a small Research Unit.

DR. MADHAVAN NAIR'S NOTE :

16.53 On these aspects, and the general situation in Neemuch, we requested our colleague Dr. P.Madhavan Nair of the National Chemical Laboratory, Poona to prepare an independent note which we have incorporated at the end of this chapter. There is considerable force in the points raised in the note recorded by a distinguished chemist familiar with alkaloid problems and they deserve consideration.

REPORT ON NEEMUCH VISIT BY DR. P.MADHAVAN NAIR.

"The Neemuch Opium Alkaloid Works consists of -

i) the main opium alkaloids plant;
ii) the synthetic codeine plant; and
iii) a process control laboratory.

In addition a research and development wing is shortly be added to the complex. It appears that both the process control laboratory and the Research and Development Wing were conceived as necessary and/or desirable units of the production complex when the present facility was first set up. It is obvious that the function of the process control laboratory is to monitor process variable to maximise production and ensure the quality of the products made. The function of a Research and Development unit in a facility of this type is, presumably, to find ways and means of improving the performance of the production facility and to work out methods for the production of any additional marketable material that might be made from the primary alkaloid materials isolated at the facility when a decision in this regard is made at the highest policy making level. It appears that some action has already been taken for the recruitment of staff for the proposed Research and Development unit and for obtaining a number of sophisticated instrument

The process for the recovery of opium alkaloids that is currently employed at the factory is one that was developed at the National Chemical Laboratory in bench scale experiments. It appears that no pilot plant data were obtained and that the project engineering firm, which was responsible for design and erection of the plant, had done the job based entirely on the results of laboratory scale experiments. It must be admitted that this procedure is unusual and might as well as have been anticipated to lead to very many difficulties in reproducing laboratory results on the plant scale. This is exactly what happened and the alkaloid works faced a period of considerable trails and tribulations. However, with pains taking and patient efforts that staff brought the production to satisfactory if not excellent levels.

The plant and associated facilities are operated by the groups of staff who are apparently under the administrative control of the Chief Chemist of the Central Revenues Control Laboratories on the one hand and the Chief Controller of Factories on the other. The facility was earlier under the charge of senior Chemists or scientists from the Central Revenues Chemical Services. The present Managing Director is apparently accountable to the Chief Controller of Factories. Out of the few who hold supervisory and allied positions of responsibility the majority seems to be drawn from Central Revenues Chemical Service. The rest which constitutes the large majority of the total staff are under the control of Chief Controller of Factories.

GRIEVANCES OF THE CENTRAL REVENUES CHEMICAL SERVICE.

It was brought to the attention of the Committee that the Central Revenues Chemical Service Chemists at the Alkaloid Works seem to be quite unhappy with some of the recent developments there. They made a representation of their grievances before the Committee. Those aspects of these that are relevant only to the Neemuch situation are touched upon in this report. The Central Revenues Chemical Service Chemists feel that it was substantially due to their efforts that the difficulties faced by the main alkaloids factory were solved and its production brought to the current levels and that these levels were attained before the present Managing Director took over charge. However, under the new Management, they feel that their contributions are not recognised and that they are treated as second rate people. They are very much concerned that they have been regarded as unsuitable for positions at the Research and Development Wing to be commissioned. Their claims have apparently been overlooked. The present Management feels that higher academic qualifications are necessary for the proposed positions at the Research and Development Unit. It also seems to be alleged that since the Central Revenues Chemical Service chemists are transferable they do not have special attachment or commitment to the Neemuch factory and are unable to give whole hearted attention to the problems of the factory. In an attempt to verify the genuineness of the grievances voiced by the Central Revenues Chemical Service chemists the Committee members put some very pointed questions to the present Managing Director as to the contributions made by the Central Revenues Chemical Service men to the solution of the problems encountered by the Alkaloid Works which are referred to earlier herein. No reply was forthcoming.

It would be proper in this connection to consider the nature of the assignment for an Research and Development section. Usually the assignment for an Research and Development section attached to a production factory would be, as noted earlier, to the ways and means of improving the production of the factory by introducing innovations or modifications. Long range basic studies on the chemistry of opium alkaloids would normally not be an assignment for such a laboratory. Such studies are better carried out in Universities or other National laboratories where there are established traditions of work of this type and where expertise in very many related areas is available. If, however, a decision in favour of long term basic researches on opium alkaloid chemistry are to be made at Neemuch, it should be gone into in detail by a Committee of Experts specially appointed to scrutinise the proposal carefully. Such decisions should not be taken in an ad-hoc manner since their implications are quite serious. So long as a major policy directive of this type is not available, it should be assumed that the function of the proposed Research and Development unit will be the customary ones mentioned. If the purpose of Research and Development work is to improve production, the criteria for suitability of qualifications will be appreciably different from those required for academic work. Those that have already made considerable contributions for improving production at the present factory at Neemuch or other similar places would become more suitable. Higher academic qualifications would be only secondary in importance.

The grievances of the Central Revenues Chemical Service chemists would become particularly relevant if the view is taken and, in my opinion, it is the view the Committee should take in the absence of any other firm directive from the Board with regard to the task of the Research and Development Wing. If this matter has already been taken to the Board for a clear ruling and only some provisional action has been taken, the committee might recommend that this matter is worth the Government's serious attention and it should be examined carefully in an appropriate manner as early as possible. The questions that arise in this connection are as follows :-

i) How great is the need for long range work in the chemistry of opium alkaloids in the present national context and the marketability of the products involved ?

ii) If there is a real need for it, is the Neemuch Research and Development unit the appropriate place for carrying out the necessary work ?

It may be mentioned in this connection that we are having considerable difficulty even in Council for Scientific and Industrial Research laboratories in the choice of really worth-while long range problems for research programmes in which there is reasonable hope of a fair return. The relevance of purely academic wor is questioned in Council for Scientific and Industrial Research laboratories. It cannot be otherwise in an Research and Development Unit of a production facility. As far as the grievances of the Central Revenues Chemical Service chemists are concerned they seem to be genuine and the Committee might recommend suitable measures for taking care of them.

THE OPIUM WORKS.

The facilities for storage of opium at this place appeared totally inadequate. Competition in the opium market has apparently increased and the take off is less. This situation will naturally create problems of storage; but no action seems to have been taken to meet it. This is surprising since the investment required for making the required storage tanks cannot be very heavy. If the situation worsens, there might be a real need for restricting the area under poppy cultivation."

Sd/-
P.Madhavan Nair
12.4.79

SECTION - VII

STAFFING OF THE OPIUM AND ALKALOID WORKS - NUMBER OF TESTS CARRIED OUT.

16.54 While there has been some norm for testing of the samples in the Customs and Excise Laboratories, no norm appears to have been fixed for analysing samples in the opium and alkaloid laboratories. The norm for opium and alkaloid analysis could not be the same as that adopted for Customs and Excise samples for the following reasons:-

i) In the Customs and Excise laboratories the number of samples tested is taken for statistical purposes, where as in the opium and Alkaloid factories, as each sample is put through several tests for different purposes, the number of tests recordded is very much larger than the number of samples drawn and hence for statistical purposes number of tests are taken as number of samples.

ii) As the inflow of samples will be of the same type (unlike in the Customs and Excise Laboratories) the work in these laboratories can well be planned ahead some extent. Even the seasonal variations can be anticipated roughly.

iii) Seasonal laboratory Assistants are recruited to work in the laboratories to cope up with increase in testing work at the beginning of the import season. A number of physical tests and routine operations involved in the opium analysis are being attended to by seasonal laboratory assistants. The laboratory work can broadly be categorisedinto 2 groups (1) first group in the opium analysis which includes tests on all opium at different stages as described earlier; (2) The second group will be in the process control laboratory, which tests all the processed opium samples, intermediate products in the manufacture of alkaloids, S.R.alkaloids, finished drugs and miscellaneous samples including store/ chemicals etc.

In Ghazipur 6 Chemists are stated to be employed for quality control and four are, more or less, exclusively on the testing of opium samples as shown below:-

1. Import Opium Samples:
   Chemical Assistant Grade II.

2. Issues from Malkhana:
   Chemical Assistant Grade I or II.

3. Export Opium Samples:
   Chemical Assistant Grade I.

4. Intermediate process samples:
   Chemical Assistant Grade I.

5. Finished Drugs:
   Chemical Assistant Grade I.

6. Stores, Seizures and other miscellaneous samples:
   Chemical Assistant Grade I.

This section is headed by an officer of the status of Chemical Examiner Grade II.

The staff employed in Neemuch are given below:

1. Opium Factory:	One Assistant Chemical Examiner and five Chemical Assistants.
2. Process Control Laboratory:	One Chemical Examiner Grade II and three Chemical Assistants Grade I.

Apart from these seasonal assistants (not less than six) are employed, and two or three chemists who work in the shifts are also drawn to cope up with heavy receipts of opium samples. The seasonal assistants do carry out a larger number of tests in Ghazipur, because of their experience of working in the factory for number of seasons. Actually, it is very difficult to get complete details of the number of samples tested by each one of them separately as no records are kept in the factories.

The number of tests performed in the quality control section is as follows.

TABLE - I

GHAZIPUR

Year	Total No. of samples tested in the Quality Control Laboratory (3+4)	Total No. of Alkaloid & Miscellaneous samples.	Total No. of Opium Samples.	Addl. No. of samples tested.
1.	2.	3.	4.	5.
1975-76	31411	7686	23725	17944
1976-77	37485	6131	31354	24421
1977-78	32536	Not made available		18687

Shri D.R.Gupta and Dr. V.S.Ramanathan, Members of the Committee who have extensive experience in Ghazipur feel that the seasonal assistants perform about 75 per cent of the tests on these samples, and the remaining 25 per cent are done by the regular staff, chemists. Chemists perform more important tests on the samples handled by the seasonal assistants also which may be taken to represent 25 per cent of the tests carried out by them.

Taking 1975-76 figures it can be seen that 23725 opium samples were analysed in Ghazipur. Out of them 75 per cent i.e. roughly 18000 samples, were handled by the seasonal assistants leaving the balance of 5752 to be done by staff chemists who also do important tests and 25 per cent of the seasonal samples (tests) i.e. roughly 4500 tests. Taking the total samples tested by six Chemical Assistants as 10225 (i.e. 5725 + 4500), the average works out to 1700 samples roughly per chemist per year. During 1976-77 the number of samples was substantially higher i.e. 31354. On the basis worked out for 1975-76 the number of samples per chemist for the year would work out to 2170. The average of these 2 years works out 1935 samples.

The following table gives the figure for Neemuch.

TABLE - II

NEEMUCH.

	1975-76	1976-77	1977-78
Total No. of Samples tested	20072	19962	19991
Total No. of samples of opium received from the District Opium Officer.	- 13079	- 13982	- 14214
	6993	5980	5777
50% of import opium.	+ 6539	+ 6991	+ 7107
	13532	12971	12384
No. of samples done by 6 chemists.	2255	2162	2147

By the process explained with reference to Ghazipur, the number of samples per staff chemist at Neemuch works out to 2255 and 2162 for the above two years, giving an average of 2188 samples per year. This higher figure in Neemuch is explained by the fact that a smaller number of less experienced seasonal assistants are employed and more than 50 per cent of the work is done by staff chemists, who work better and factors necessitating fewer re-checks.

The Committee did not have the time or separate scientific staff to carry out a time motion study to determine the norm of work in these two establishments and had to depend on the figures supplied by the two factory managers for the last 2/3 years. Taking 1975-76 and 76-77 as more normal years, we were able to deduce that in Ghazipur the number of tests (opium) carried out by a chemist would amount to nearly 1700 and 2170 respectively. The temporary seasonal assistants employed in Neemuch did not exceed 4 in number, and their output was less because of their comparative inexperience. The average output per chemist at Neemuch has been given in the preceding paragraph. We could assume for both the factories that in a normal year of 277 working days a chemist does about 2000 opium samples (tests per year).

16.55 The figures of tests of finished drugs and intermediates in the alkaloid side work out to 1880 and 1620 in Neemuch and Ghazipur respectively. It will be prudent to assume an average of 1750 samples per year per chemist for the process control laboratory for both the factories based on the figures made available to us and in the absence of work measurement study.

16.56 THE PROPOSED STAFF FOR THE NEEMUCH AND GHAZIPUR FACTORIES.

Members of the technical staff Associations which met the Committee at the Ghazipur factory pleaded that the staff pattern in Ghazipur and Neemuch should be similar. Neemuch plant being a new one has been given preferential treatment in the matter of posts as well as in fixing higher pay scales for them. The fact that Ghazipur factory is an old one should not be the reason for perpetuating this disparity. The Sales Manager at Ghazipur factory contended that at present the sale proceeds of the sale of finished drugs in Ghazipur is more than at Neemuch. The Committee agrees that the quantum of staff should be related to the actual load of work but there should be parity in pay scale. The Board has already sanctioned posts for Research and Development and process control for the Neemuch factory. Once the 2nd shift starts at Neemuch, more posts are likely to be sanctioned. The post of Chemical Examiner Grade I for the Opium Laboratory at Neemuch has been exchanged with Chemical Examiner Grade II which was originally sanctioned. However, the Committee recommends that a Chemical Examiner Grade I post be acceded to in lieu of the Grade II post, since the transfer post has been effected in view of the increase in work at Baroda rather than the decrease in work at Neemuch. The Neemuch factory has had the post of Chemical Examiner Grade I continuously for not less than three years.

16.56.a The Committee would like to ensure certain parity between Ghazipur and Neemuch factories and accordingly recommends the following posts for the Ghazipur factory in the reorganised set up.

1. Deputy Director Grade I in the scale of Rs. 1800-2000 will be the ex-officio General Manager.	1 post.
2. Deputy Director Grade II in the scale of Rs. 1500-1800 Incharge of the Alkaloid Works.	1 post
3. Assistant Director (Production) in the scale of Rs. 1100-1600	1 post
4. Assistant Director (Research and Development and Quality Control) in the scale of Rs.1100-1600.	1 post
5. Scientific Officer (Research and Development) in the scale of Rs.700-1300.	1 post

6. Scientific Officer (Process Control) in the scale of Rs.700-1300. 7 posts

  i) Morphine manufacturing section - 3 posts
  ii) Synthetic codeine section - 2 posts
  iii) Narcotine section - 1 post.
  iv) Finished drugs section - 1 post.

7. Analysts in the scale of Rs.550-900. 27 posts.

  i) Morphine manufacturing section - 9 posts.
  ii) Synthetic codeine section - 6 posts.
  iii) Finished drugs section - 1 post.
  iv) Research and Development section. - 1 post.
  v) Quality Control section - 7 posts.
  vi) Narcotine section - 1 post
  vii) Indian Medicinal Opium (Power and Cake) Section. - 1 post
  viii) Packing Section 1 post.

The above reorganisation can be effected by suitable upgradation of the existing posts as well as by creation of 11 new posts viz. 1 post of Deputy Director Grade I, 4 posts of Scientific Officers and 6 posts of Analysts.

SECTION - VIII

POPPY STRAW

16.57 The Committee could not go into the question in detail as it did not receive sufficient information on this point. The note given by Dr. V.S.Ramanathan, member of the Committee, who is familiar with this subject, is reproduced below :

> "The term poppy straw, as is commonly understood, is the dry poppy capsules free from seeds with about 10 cm. stalk attached to it. Thirteen countries in the world produce morphine using mainly unlanced poppy straw. India produces nearly 20,000 tonnes of lanced poppy capsules in a year which is treated as a waste material now. These lanced capsules contain 0.2 to 0.3 per cent of anhydrous morphine. There is a proposal to establish a factory for extraction of morphine and other alkaloids from about 12,000 tonnes of lanced Indian poppy capsules in a year which can yield about 17 tonnes of morphine. The straw extraction plant, when goes into operation would utilise the lanced Indian capsules usefully and profitably."

CHAPTER - 17

STAFF MORALE - SUGGESTIONS FOR IMPROVEMENT

SECTION - I

17.1 Our terms of reference required us to go into the question of service conditions of the Central Revenues Chemical Service Officers. Though our questionnaire did not invite the opinion of Collectors of Customs and Central Excises and the Laboratory chiefs on this matter, nevertheless several suggestions were made to us by them. Of course in our meeting with officers, these topics were naturally discussed. We will briefly summarise their opinions at a laterstage. We also received representations from the Chemical Service Associations in every laboratory we visited. Besides a general representation was given to us at Delhi on behalf of the All India Association of chemical staff.

Their main grievances are:-

1. The pay scales at all levels are inadequate and overlapping;
2. Frequency of transfers especially of officers on the junior ranks; further transfers are effected in Class-III grade also with no facility for Government accommodation.
3. Slow rate of promotion from one rank to the next senior rank; it takes at least 10 to 12 years of total service in most cases to get into Class II;
4. The treatment meeted out to them by the Executive officers on the Customs and Central Excise Administration side with occasional exceptions;
5. The frequency of officers leaving the department out of frust-ation to better their prospects outside;

6. The inadequacy of facilities made available to them to improve their technical knowledge and efficiency;

7. The recruitment of Chemists having almost the same qualifications directly by the Union Public Service Commission at higher levels thus blocking the chances of their promotion; and

8. Lack of initial training in matters connected with the Customs and Central Excise and general commercial and industrial intelligence and also lack of facilities for training at higher stages.

17.3 From the terms of reference, it is quite obvious the Government is fully aware of the sense of frustration experienced by most of the officers and the complete restructuring the service is essential to make it attractive to young Post-graduates seeking scientific careers. That restructuring is necessary, is indicated in the request made by several Collectors of Central Excise for posting a Chemist of sufficient status as adviser to the Collectorates on scientific matters and in order to help the Collectors to inspect the industrial processes involved in the manufacture of excisable commodities. We should also briefly mention here that the chemical staff in the laboratories are not merely analysts giving their factual report and the analysis of the samples sent to them, but they have also now to advise the Collectors and even the Appellate and Revisionary authorities upto the highest level, over matters of interpretation of the tariff. They have to appear in Courts to defend their reports and advise against the fury of cross examination by defence councils. If these functions are to be discharged efficiently, their status should be improved so that they will hold their own not only against officers on comparable levels in the Customs and Central Excise services but also with the manufacturers, Importers and Exporters.

17.4 We have enumerated earlier the grievances of the Chemists under several heads. Most of these grievances are inter-related. Many of them arise partly from the higher responsibilities which they are assuming for which adequate recognition and appreciations is not forth coming from the executive wing at all levels. This lack of appreciation makes them feel that they are treated as inferior type of Government Servants by officers at various levels which gives them a sense of inferiority although in qualifications etc, they are equally competent. This is not merely lack of liaison or communication gap.

17.5 The frustration among the chemical services and the loss of incentive that results therefrom, can be rectified only by improving their status and emoluments. We have therefore come to the conclusion that the bulk of the Chemists should be organised into an established Class I service with a layer of Class II or Class III at the bottom from which promotion prospects should also be possible. Bearing these in mind we have suggested a small cadre of non-gazetted Class III officers for entry to which a lower qualification is prescribed; and the larger cadre of Class I officers with necessary divisions along the line comparable to the structure of the Customs and Central Excise service or any other Class I service. We have also discussed elsewhere that direct recruitment to Class I services should be on the basis of competitive examination. We have also examined and compared the pay scales and prospects of scientists with similar qualifications in the various National laboratories and in the Indian Agricultural Research Institute etc. in making our recommendations.

17.6 Transfers:

We have referred to the grievence about frequency of transfers particularly of Chemical Assistants. We have proposed instead of Chemical Assistants, a new cadre of analysts to be recruited on a regional basis. We strongly urge that the transfer of analysts should be done only within the region. Technical Assistants should be restricted to the laboratories to which they are recruited and may be transferred only on request.

17.7 As both the opium and alkaloid factories are in the Northern region, ordinarily analysts from other regions will not have the opportunity to get this experience. As on promotion, they are liable to all India transfers, analysts in other regions may be asked to volunteer for work at Ghazipur and Neemuch in their own interest.

17.8 For Analysts an all India seniority list should be maintained bearing in mind the general guidelines for determining seniority. Technical Assistants should be included in a regional seniority list as they become liable to transfers within the region once they are promoted as Analysts.

17.9 ACCOMMODATION :

Regarding accommodation their grievance is legitimate - as far as possible Ghazipur and Neemuch must have their self-contained housing colony. In other places, laboratory service officers must be treated on par with officers of the executive branch in the matter of allotment of Government housing.

17.10 OPIUM AND ALKALOID SERVICES :

The Chemical Service Association had made a plea that people who are sent abroad for training in Opium are all past middle age and that younger people should be sent abroad for training in Narcotics. The Committee is convinced of their plea and recommend that it will be better if people from lower age groups are sent for training.

17.11 There is a request for grant of a ex-gratia production award to officers engaged in manufacturing activities irrespective of pay limitations. If in Government undertakings such award is given for pay scales higher than Rs. 750/-, the benefit should be extended to the technical staff working in the opium and Alkaloid factories also, subject to a limit of pay of Rs.1500/-.

SECTION - II

STAFF STRUCTURE AND PAY SCALES

17.12 Observations of the Third Pay Commission :

Before making our specific recommendations for restructuring of the Central Revenues Chemical Service and suggesting better scales of pay, we find it relevant to refer to some of the observations of the Third Pay Commission on scientific services and Central Revenues Chemical Service in particular.

17.13 In para 15 to 18 dealing with scientific services, the Commission observed that positive incentives should be provided to talented science graduates to seek scientific careers, while admitting that science graduates also gravitate towards administrative services. They admitted the need to redress the balances at present tilted against the scientists. They also went further to add that they are trying to ensure that the opportunities for advancement for a meritorious scientist in his own line are comparable to those of the highest administrative and technical cadres. They suggested the designing of the pay structure in such a way as to ensure reward for good services, selective promotion and adequate flexibility by providing for timely creation of higher posts before frustration sets in. By way of concrete steps they suggested among others, the following:-

i) fixation of the number of junior and senior Class I posts taken together so that the controlling authority can vary the number in each section in such a way as to ensure that an officer in the junior scale gets the senior scale around the 6th year of service.

ii) Flexibility in the number of posts above the senior scale to facilitate promotion of meritorious scientists who could for want of specific vacancy stagnate in the senior scale. The number of such higher posts should not be in excess of 30 per cent of the total number of posts in the junior and senior scale.

iii) Promotion in scientific department should be made on the basis of the periodic assessment, say once or twice a year (by one or more committees consisting of the head of the laboratory and outside experts in kindred discipline).

iv) These recommendations would apply to all scientific posts except those pertaining to administrative and advisory functions in the Ministries and Departments.

17.14 Thereafter they proceeded to discuss and formulate scales of pay for all levels of posts from junior scale Class I to Heads of Scientific Organisations. We will revert to one or two of the general recommendations at the relevant context later in the report.

17.15 After laying down these liberal grounds rules, the Commission proceeded to discuss the Central Revenues Chemical Service in paragraphs 94 to 93 which we are reproducing below for convenience of reference:

> "94. The Central Revenues Chemical Laboratories analyse samples of raw materials and finished goods for the purpose of deciding their classification under the Import and Export Trade Regulations for verifying claims of drawback under the prescribed drawback rules etc. Officers employed in these laboratories are required to give technical advice on issues referred to them by the other Customs and Excise Officers in connection with their work. The laboratory at Delhi is also responsible for determining and certifying the morphine content of export quality opium on the basis of which its price is fixed.

95. For manning these laboratories, there is a Central Revenues Chemical Service in the following grades:-

TABLE XXVIII

Sr. No.	Designation of the post.	Number of posts	Existing scale of pay.
	CLASS-I		
1.	Chief Chemist	1	Rs.1600-100-1800
2.	Deputy Chief Chemist	3	Rs.1100-50-1400
3.	Chemical Examiner Grade-I	9	Rs. 700-50-1250
4.	Chemical Examiner Grade-II	8	Rs. 400-40-800-50-950
	CLASS-II		
5.	Assistant Chemical Examiner	51	Rs.350-25-500-30-590-EB-30-800-EB-30-830-35-900
	CLASS-III		
6.	Chemical Assistant Grade-I	67	Rs.325-15-475-EB-20-575
7.	Chemical Assistant Grade-II	57	Rs.210-10-290-15-320-EB-15-425(Start of Rs.250 for M.Sc.)

The posts of Chemical Assistant Grade II are filled by direct recruitment from amongst First or Second Class M.Sc. in Chemistry or B.Sc.(Hons.) with Chemistry. The posts of Assistant Chemical Examiner are filled to the extent of 25% by direct recruitment of M.Scs. in Chemistry with two years experience in analytical Chemistry. 50% of the posts of Chemical Examiner Grade II and 25% of the posts of Chemical Examiner Grade I are also filled by direct recruitment of M.Scs. in Chemistry having 3 and 5 years experience respectively.

96. The Central Revenues Chemical Service Association has complained of imbalance in organisation of the service with fewer top level posts than are required for a balanced structure. The Department of Revenue and Insurance has reported that the provision in the existing recruitment rules for the direct recruitment at various levels has caused stagnation in the service. We understand that the Department is considering the question of stopping direct recruitment at the level of Assistant Chemical Examiner. We think that this step could considerably improve the promotion prospects upto Class II level. We would recommend that 25% direct recruitment at the level of Chemical Examiner Grade I may also be stopped.

97. The service association has also demanded parity of their pay scales with those of the Customs and Excise executive cadres. Taking into consideration the difference in the nature of duties we see no justification in establishing an equation between these cadres. The officers of the Central Revenue Chemical Service possess scientific qualifications and perform duties similar to those of other scientific workers. Because of this affinity, we consider that the various posts in the Central Revenue Chemical Service should be on the same scales as suggested for corresponding scientific posts in other Government Departments. Accordingly, we recommend the following pay scales for the posts in the Central Revenue Chemical Service:-

TABLE XXIX

Sr. No.	Designation of post	Proposed scale of pay.
1.	Chief Chemist	Rs.2000-2500
2.	Deputy Chief Chemist	Rs.1500-1800
3.	Chemical Examiner Grade I	Rs.1100-1600*
4.	Chemical Examiner Grade II	Rs. 700-1300
5.	Assistant Chemical Examiner	Rs. 650-1200
6.	Chemical Assistant Grade I	Rs. 550- 900
7.	Chemical Assistant Grade II	Rs. 425- 700

*Member-Secretary has dissented with this vide his note of Dissent.

> 98. There is a post of Instrument Maker (Rs.125-3-131-4-155) which is filled by direct recruitment from amongst Middle pass candidates who have passed the final examination of a recognised Industrial School or possess a technical diploma in metal turning and metal work for making instruments. We recommend the scale of Rs.290-400 for this post".

17.16 The Commission admitted the complaints of the service association about the imbalance in the service structure and had taken note of the observations of the Department of Revenue that the existing provisions for direct recruitment at different levels have caused stagnation. But in paragraph 97 they had taken exception to the demand of the Association for parity with the pay scales of the Customs and Excise Executive cadre and suggested parity with the scientific workers in scientific organisations and other laboratories.

17.17 The Committee, however, would like to point out that the Pay Commission failed to take cognisance of a few essential features of the Central Revenues Chemical Services perhaps due to poor advocacy of their case before the Commission.

17.18.1 These scientists work in the laboratories attached to the Customs and Central Excise Department (except for those in the Opium side and the central laboratory). Their academic qualifications are not inferior to those of the officers with whom they have daily contact. The Pay Commission itself admitted that they give technical advice on issues referred to them apart from the main analytical work. The nature and extent of their advisory and interpretative work at all levels, up to the Board of Excise and Customs has been elaborately dealt with in other parts of this report. It is but natural that they should seek parity with their opposite numbers on the executive cadres. It is the lack of parity that has been the main irritant and the cause for the general demoralisation and frustration which has long been noticed. This should be set right by giving them proper status in administration, built on a hierarchy basis. This parity or equality can be achieved only by improving their status (Class of Service) and along with it their pay scales and promotion prospects.

17.18.2 Possibly due to poor advocacy before the Commission, they left the old classification untouched and did not suggest a unified Class-I in the junior and senior time scales which they had suggested for scientific services in the earlier paragraphs of the report which we have referred to above. The Committee feels that the case of chemical service was not pleaded effectively before the Commission.

17.18.3 Coming to the top post of the Chief Chemist, they had suggested a scale of Rs.2000-2500 whereas for "Heads of scientific organisations with large field formations" they had suggested a fixed scale of Rs.3000. Correspondingly higher grades were suggested for other heads and deputy heads of major organisations and laboratories.

17.19 The Chief Chemist is now the head of 15 laboratories and we envisage that this number will go upto twenty or even more in the coming years. He certainly deserves to be described as head of an organisation with a large field formation.

17.20 Having made these references to the Pay Commission recommendations and mainly in the light of the principles laid down by them, we now proceed to describe the structure and pay scales we consider desirable.

SECTION - III

THE NEED FOR A CLASS-I SERVICE.

17.21 The Central Revenues Chemical Service, needs strengthening in quality, and in numbers. Quality can be ensured only by a better method of recruitment and service structuring. There is also the imperative necessity to improve their status. As long as the majority or them are in categories which are inferior to a Class-I Central Services, it is not possible to expect them to make full use of their talent and give to the Administration the best they are capable of. The case is not based purely on the grounds of their grievances enumerated elsewhere. Genuine though they are, purely revenue and administrative considerations also justify giving them a higher status. We were ourselves agreeably surprised to find that this need is appreciated by many of the Collectors of Customs and Central Excise. The various roles of the chemists in the Revenue administration has been set out at length in a note prepared by one of our very perceptive Collectors, and we are giving below some extracts therefrom:

> "In the context of the growing complexities in the Central Excise Tariff and Customs Tariff based on Customs co-operation Council nomenclature the role of the Central Revenues Laboratory and the technical assistance of the matter of proper classification of goods. Items 14-D (synthetic organic dyestuff), 15-A (plastics) and 22-F (Mineral fibres and yarn) are items which are complicated in nature requiring not merely a chemical test for classification but also technical advice. The chemical laboratories and the technical staff have, therefore, ceased to be merely an organisation meant for carrying out chemical tests and furnishing the composition of the articles referred to them".
>
> It will be necessary for the officers on the chemical establishment to keep in touch with

modern technological advances not merely in the academic sphere but also in the actual application of science in industry. This [illegible] has not perhaps been appreciated fully and at times leads to differences of opinion between the Department and the trade. It is, therefore, urged that the officers on the chemical establishment should be afforded facilities for keeping in touch with technological advances in industry by frequently visiting the factories of manufacture and taking part in seminars and conferences arranged by the industry".

"The technical experts can also play a leading role in checking evasion of excise duties. Rule 173-E provides for determination of norm of production and it empowers the proper officer to call upon the assessee to explain any short fall in production during any time as compared to the norm. If the shortfall is not accounted for to the satisfaction of the said officer he may assess the duty due thereon to the best of his judgement, after giving the assessee a reasonable opportunity of being heard. The determination of norms of production will require the existence of normal conditions of production. In an economy of shortages particularly of raw material and power, the precondition of normalcy of production is rather difficult to achieve. A majority of the industrial units have old plant and machinery, which again is a handicap in the determination of the norm. Further difficulties are introduced by labour unrest, strikes and lock outs. Though under these conditions the determination of the norm itself may be difficult, it may be possible with the help of the technical staff to at least examine cases of abnormal fall in production etc.".

"The introduction of the Record Based Control and the Production Based Control also emphasise the increasing role of the technical staff. Realising this the Government has decided to recruit technical personnel in the Group 'B' cadre. Here again the existing technical personnel on the chemical establishment should be able to aid and assist the field officers. The field officers whose technical knowledge of production is very much limited cannot, in the very nature of things, exercise effective checks at the various stages of production. The prescription of the raw material account and the

> requirement of relating the input and output though perfect on paper, are in reality futile in view of the limitations on the field staff conducting any such exercise. The laboratory personnel with the requisite technical knowledge and expertise could do it better and it is imperative that their services are utilised in a greater measure. Scrutiny of costing reports to verify whether there is a proper input output ratio and the testing of samples of raw material such as oil cakes in Solvent extraction plants to ascertain the oil content and verify the percentage of extraction are fields where technical knowledge will be of invaluable help. Otherwise the present system of merely scrutinising the production figures at various stages of production and checking arithmetical calculations will only continue".

17.22 This elucidation of the important and essential role the chemists must play and/or playing as set out in the note coming as it does for a Collector, and not for a Chemical Service Officer, deserves due consideration. Having said enough about the quality and status of the service we must also emphasize that quality can be ensured only if the officers are given proper conditions of work. Quality of work is largely dependent on the volume of work expected of a scientist however academically well qualified he or she is. We have already referred to the feeling of the Chemists being over worked. Only under conditions when quality is not required to be sacrificed for quantity of output will any scientist be able to do his best.

SECTION - IV

STRENGTH OF THE CADRE

17.23 In determining the strength of the service or the number of scientists required for each laboratory, we must to a large extent be guided by the number of samples coming up annually for test in each laboratory and the time taken for testing each sample. We have indicated elsewhere (Chapter 13) that there is no uniformity in the time factor. Some need simple analysis, taking perhaps an hour or so, some may require complicated analysis, reference to literature, several subsidiary tests and re-tests. Such analysis will involve a team of chemists for several days. To strike an average is difficult; but it may serve at best as a working hypothesis. We called for particulars of samples analysed in the two laboratories at Bombay and one each at Calcutta and Madras. These have been exhaustively dealt with in Chapter 13. In estimating staff requirements we have been guided by the yardstick arrived in this study and some other relevant factors mentioned in other Chapters.

17.24 In suggesting a new structure for the Customs and Excise Chemical Service we have studied the situation as it is obtaining in the various National Laboratories under the Council of Scientific and Industrial Research including specialised laboratories like the Central Drug Research Institute, Lucknow and the Industrial Toxicological Research Centre at Lucknow and the Central Forensic Science Laboratory in New Delhi. Each of these Institutions is located in one particular area, and all the scientists varying in number say from 40 to 300 work in the same complex. As against such a situation a chemist in Central Revenues Chemical Service has the liability to work in about 15 laboratories now including such specialised laboratories as Petroleum Refinery Laboratories and Opium and Alkaloid Works; and may soon be required to work in larger number of laboratories. In addition to the laboratory work they also do certain number of factory inspections and advisory work for the Central Excise Collectorates. So in fixing the number, classification and pay structure of various levels, this additional factor of transferability and adjustability to new and changing conditions of work should also be taken into account. We, therefore, find it quite necessary to constitute a full-fledged Established Central Class I service and all the posts that are now included in the categories which are regarded as gazetted and the comparable additional posts which would be created by adoption of our yardstick should legitimately be included in Class I.

ANALYSTS

17.25 The only serious factor that requires to be considered is the position of Group 'C' non-gazetted chemical assistants Grade-I and Grade-II who will be replaced by analysts. The Grade-I Chemical assistants are on time scale of Rs.550-25-750-EB-30-900. The time scale covers a span of 14 years. There is no direct recruitment to this grade. The direct recruitment is made to the next lower grade of Chemical assistant Grade-II on a pay scale of Rs.425-15-500-EB-15-560-20-700. This time scale covers a fairly long period of 17 years; but in actual practice chemical assistants Grade II are being promoted to Grade-I in about four to six years. The fixation of such a long period time scale when officers don't remain in the scale for more than four or five years has served no purpose. The average time taken by chemical assistants Grade-I for promotion to the next higher grade of Assistant Chemical Examiner is 10 to 12 years of total service in both the grades of chemical assistants. There are at present 64 posts of chemical assistant Grade-I and 85 posts of chemical assistant Grade-II making a total of 149 posts. It is interesting to emphasise again that ordinarily a M.Sc. with a first class or second class is recruited even as a chemical assistant Grade-II. We have suggested therefore that there should only be one grade of Chemical Assistants outside class I and it should be given a pay scale now admissible to chemical assistants Grade I i.e. 550-25-750-EB-30-900 and designated as Analysts. The pay scale proposed namely 550-900 is now included as non-gazetted category.

ANALYSTS & THEIR PAY SCALES

17.26 The class II gazetted or group 'B' category carries a pay scale of Rs.650-1200. The Heads of National Laboratories and Scientific Institutions under Council of Scientific and Industrial Research when we consulted explained that in view of this scale practically overlapping the junior time scale Class I which is Rs.700-1300, they are inclined to do away with this scale altogether, by upgrading these posts to Class I junior time scale. Inspite of the heirarchical nature of Central Revenues Chemical Service and its comparability to the Executive cadres in the Customs and Excise service, it will still not advisable to retain a category on this pay scale, (notwithstanding the theoretical objection that there could be no promotion from Class-III straightaway to Class-I). We are not keen for reasons of economy and for administrative reasons, on upgrading all Class-III posts. Even in our study relating to nature of tests in laboratories, we have classified tests into three categories, the recruitment to the grade of analysts and technical assistants should be on a regional and laboratory basis. All vacancies in these grades should be advertised on a regional basis and selection should be made by a Committee under the Chairmanship of the jurisdictional Collector, the Deputy Director and an outside technical expert. The appointing authority will be the Director.

NEW DESIGNATIONS

17.29 The new designations and pay scales proposed are briefly summarised below:-

17.29.1 Chief Chemist should be designated as Director of Central Revenues Laboratories and scientific adviser to the Department of Revenue. The new cadre to be introduced in the grade of Rs.2000-2500 in the Central laboratory and for Bombay region should be designated as Joint Directors.

17.29.2 The heads of the following six major regional laboratories should be designated as Deputy Directors Grade-I. The laboratories are:-

1. Customs Laboratory, Bombay.
2. Central Excise Laboratory, Bombay.
3. Customs and Central Excise Laboratory, Madras.
4. Customs and Central Excise Laboratory, Calcutta.
5. Central Excise Laboratory, Delhi.
6. Opium and Alkaloid Laboratory, Ghazipur.

17.29.3 The heads of the 3 laboratories mentioned below should be designated as Deputy Directors Grade-II. These laboratories are:-

1. Central Excise Laboratory, Baroda.
2. Central Excise Laboratory, Kanpur.
3. Customs and Central Excise Laboratory, Cochin.

and for performing the simplest level of tests, it is not necessary to have officers on the pay scale of Rs.650-1200 or on the junior time scale Class-I of Rs.700-1300. As 50 per cent of the Class-I posts will be available for promotion, the retention of the Class-III scale will not cause undue hardship to the incumbents of these posts. We feel happy if these officers could be given Gazetted status.

TECHNICAL ASSISTANTS

17.27 It is understood that there are at present about 35 posts of laboratory attenders vacant, and more posts may have to be created hereafter when the existing laboratories are strengthened and new laboratories come into existence. These vacant posts should not be filled up; but we should try to recruit a new class of laboratory assistants to be designated as technical assistants. They should be B.Sc. with chemistry, or diploma holders in chemical Engineering, Technology or Rubber technology or Electrical Engineering etc. as may be needed, and they should be given specialised training in selected major laboratories for handling instruments, particularly the use of sophisticated instruments, and 25 per cent of the vacancies occurring in the Grade of Analysts would be reserved for promotion from this new cadre of technical assistants. We suggest a pay scale of Rs.425-700 comparable to similar scientific workers in other National laboratories for the technical assistants. This will be a non-gazetted cadre and recruitment and transfers will be on a laboratory basis as far as practicable.

RECRUITMENT OF ANALYSTS AND TECHNICAL ASSISTANTS

17.28 While the recruitment of Class-I posts should be partly by competitive examination and partly by promotion, 17.29.4 In the major laboratories in which we included the opium and Alkaloid laboratories there should be divisions, commodity-wise or work-wise. The heads of these divisions should be designated as Assistant Directors. The Assistant Directors will be drawn from Class-I Chemists on the senior time scale.

17.29.5 The bulk of the analytical work will be done by the junior time scale Class-I officers assisted by the analysts (now Chemical Assistant) and technical Assistants. A chart showing the divisions and distribution of testing work in all major laboratories is given below:

CHART FOR COMMODITY-WISE DIVISIONS PROPOSED IN MAJOR LABORATORIES.

F THE ATORY.	NO. OF DIVISIONS	DIVISION I.	DIVISION II.	DIVISION III.	DIVISION IV.	DIVISION V.	DIVISION VI.	DIVISION VII.
2.	3.	4.	5.	6.	7.	8.	9.	10.
evenues abora- Delhi.	7	Textiles (Retest Samples)	Resins, Plastics, Mineral Oil, Paper etc. (Retest Samples)	M. and T.P Customs Exemption certificates; and I.S.I.	Board's files seeking advice, Tariff Conference, CCCN papers, P.A.C. matters Budget matters, Parliamentary Questions.	Coordination, Research and Development, Test Procedure manual Instruments.	Export Opium experimental opium from I.A.R.I.	Drug tes ing and Research and Deve lopment in opiu analysis
use y,	7	Textiles	Chemicals; Rubber; Resins and Plastics, Organic Surface Active Agents.	Dyes, Pesticides, Mineral Oils.	Mineral Ores, Metal and alloys; Clays, refractories weighments and analysis of seized gold etc.	Essential oils, Resincids; paper products; paints and varnish; and other allied products	Miscellaneous Trade Products; and handling and maintenance of sophisticated instruments.	Technica opinion and opi ion sam es rece ved fro P.R.O.
use y	4	Textiles	Paints, Varnish; Rubber Resins and Miscellaneous and mineral oils	Paper - Paper product, Sugar and Vegetable products.	Technical opinions, maintenance and handling of sophisticated instruments.			
use y,	5	Textiles	Paints, Varnish, Rubber Resin, miscellaneous, Mineral Oil samples.	Paper, Paper Products; Sugar and Vegetable Products.	Technical opinions, maintenance and handling of sophisticated instruments.	Training School lecture and seminars.		

2.	3.	4.	5.	6.	7.	8.	9.	1
Central Excise Laboratory, Bombay.	4	Textiles	Sugar and Vegetable Products.	Paints, Resins and O.S.A.	Miscellaneous and instruments maintenance and handling of.			
Central Excise Laboratory Baroda.	2	Textiles	Mineral oil products; and others. Maintenance and handling of instruments.					
Central Excise Laboratory, Kanpur	2	Textiles	Inorganic analysis; Miscellaneous, and instruments(Maintenance and handling).					
Central Excise Laboratory, Delhi.	3	Textiles	Sugar and Vegetable Products.	Paints, Varnish; Resin, Chemicals; Instruments (Maintenance and handling)				
Custom House Laboratory, Cochin.	2	Textiles Vegetable Products and Sugar .	Mineral Oils, Paper, Paper Products, Rubber; maintenance and handling of ins-truments.					

17.29.6 In devising the Divisions, we have borne in mind the need for specialisation which we emphasised in Chapter 13. In addition to a major commodity or group we have included in each Division served minor commodities which may or not be chemically related to the main commodity in some Divisions. Flexibility and continuity of flow of work are taken care of - This Division is suggested only as a model, and can be modified to suit the requirements of each laboratory.

17.29.7 Regarding the Posts in Ghazipur and Neemuch and Divisional formations reference is invited to Para 16.56 of the report for further details.

CHAPTER - 18.

STAFF STRUCTURE, PAY SCALES, RECRUITMENT, TRAINING, PROMOTION ETC.

SECTION - I

STRUCTURE, PAY SCALES, RECRUITMENT.

18.1 The service may be designated as "Central Revenues Scientific/Technical Service" and should be included in the list of Established Services. The present trend of activities not only include chemical but also Industrial Engineering, Metallurgical etc. etc. and hence the new designation. It is essentially a scientific service, as already recognised by the Third Pay Commission. We give below the categories of posts and pay scales, we consider appropriate. The number of posts in each category and their distribution etc. is explained in later paragraphs.

This cadre should include:

Name of the post.	Pay.
a) Director & Scientific Adviser.	Rs.2500-125/2-2750.
b) Joint Director	Rs.2000-125/2-2500.
c) Deputy Director, Grade I.	Rs.1800-100-2000.
Deputy Director, Grade II.	Rs.1500-100-1800.
d) Assistant Director.	Rs.1100-50-1600.
e) Scientific Officer.	Rs.700-40-900-EB-40-1100-50-1300.
f) Analyst (Group-B) Gazetted.	Rs.550-25-750-EB-30-900
g) Technical Assistant.	Rs.425-15-500-EB-15-560 20-700.

18.2 Instead of being a service of Chemical Analysts, the aim is to secure officers with knowledge and experience in disciplines outside pure chemistry as well. The scheme of recruitment must be designed in such a manner as to attract brilliant university men with knowledge and experience in other kindred scientific fields. We are providing for such a wide scope in the examination scheme proposed and for the cadre of analysts and technical assistants also recruitment should be from a wider field.

18.3 Minimum essential educational qualification should be Master's Degree in Chemistry or M.Sc. in any other scientific discipline with the desirable qualification as two years industrial or research or analytical experience. The maximum age limit should in consequence be raised by two years. The competing candidates for the entrance examination must appear for written tests as set out below and a personal interview.

Three written papers (objective type).

1. Economic Geography of India - Indian Industries - Import and Export Trade.	100 marks.
2. Analytical Chemistry.	200 marks.
3. Any one of the following subjects: one apaper carrying - a) Industrial and Chemical Engineering. b) Electrical or Electronic Engineering. c) Metallurgy. d) Organic Chemistry including Drugs, Paints and Plastics. e) Biology including Pharmaceutical Chemistry.	200 marks.
Interview.	100 marks.
Total :	600 marks.

These can be finalised by the Ministry in consultation with the Union Public Service Commission.

18.4 It was frequently brought to our notice by Departmental officers and other outside witnesses that the technical service should have officers who have qualified in disciplines other than Chemistry. In the syllabus we have suggested, we have allowed some latitude to serve this purpose. But if at any time the department feels the need for a metallurgist, or an Engineer or a specialist in some other subject in the laboratory, it is open to the appointing authority to reserve one or more posts for such a specialist, and prescribe the necessary qualifying tests. All that we emphasize is that such a specialist should come in as a Junior Class-I officer except in extraordinary circumstances.

18.5 In view of the creation of a class I service, with junior and senior time scale and the creation of several higher posts, it is normally expected that all existing officers of the level of Assistant Chemical Examiner, Class I and above will be selected for absorption at suitable stages in the time scales in the higher posts.

18.6 However as already stated in the preceding para 18.4 every aspect of service regulations proposed viz. minimum academic qualifications, length of qualifying service etc. for these and other posts will necessarily to be finalised in consultation with the Union Public Service Commission.

18.7 The departmental candidates should be permitted to compete with outside candidates for the Class I service if they are otherwise eligible. Departmental promotion quota to Class I cadre should be restricted to 50 per cent (1 post for every one promotee) and promotion should be by selection from amongst eligible officers from the lower cadre i.e. of Analysts.

18.8 It goes without saying that as in other Established services, the promotion in this service also should be based on merit-cum-seniority on the basis of the recommendation of the duly appointed departmental promotion committee.

18.9 All promotions up to Deputy Director should go to the service officers on the principle of merit-cum-seniority as adjudged in the manner indicated above. But for the top posts of Director and Joint Director, it should be advisable to follow the principle generally followed in all National Laboratories.

18.10 It would be in the interest of the Technical Service itself to have a dynamic person with a reputation in the scientific community as its Head and it would be an advantage if the service itself throws up some one. Any Class-I service properly recruited and trained does produce outstanding officers. But in view of several adhoc recruitments at different levels and the frustration and drop-out that have been the feature in the past a situation could arise justifying reinforcement at the top level by bringing in an outsider. Such outside recruitment should as far as possible be avoided. But if good candidates are not available for appointment as Joint Director or Director, it should be open to the Government to attract a suitable scientist with a good standing in the scientific community. This should not be done by advertising the post. This job should be entrusted to an Advisory Committee specially constituted for the purpose. That Committee should have besides the Chairman of the Central Board of Excise & Customs, a scientific member of the Union Public Service Commission and two distinguished working scientists from other laboratories. The scientific member of the Union Public Service Commission and the senior scientists preferably, Heads of outside laboratories, should be requested to ascertain the availability of suitable scientific officers and to give them a chance to visit the Customs Laboratories and invite acceptance from them, if offer is made for the post. In this way the dignity of the scientist is maintained and there would be no feeling among the members of the Central Revenues Scientific/Technical Service that they have been superseded, because they would also have an opportunity of meeting the Advisory Committee. In view of the more attractive pay scales (which would inevitably carry better status) proposed, it should be possible to attract eminent scientific workers. This would also act as a stimulus to the brighter officers in the Central Revenues Scientific/Technical Service to improve their own performance and achievements. It is desirable that at any one time, not more than one officer is brought from outside - a Joint Director or Director. However since the work of Central Revenues Laboratories is basically tariff oriented rather than research oriented, recruitment from inside the service should be the rule, open selections being regarded as an exception and as a dernier resort.

SECTION - II

TRAINING AND REFRESHER COURSES FOR CHEMISTS.

18.11.1 All Grade-I Chemical Assistants who will be absorbed in the proposed Class I service should be sent in convenient batches to the Training School maintained by the Directorate of Training for an initial foundation course in Customs and Excise Laws, tariffs and procedure. All future direct recruits should also undergo this foundation course.

18.11.2 Thereafter they should be attached to one of the Regional Laboratories, preferably Madras, to be recognised as a Training Laboratory, for a period of 6 months. During this spell of training in the Regional Laboratory they should acquaint themselves with customs examination procedure in ports, and Central Excise assessment and documentation procedure. Thereafter they should be sent to one of the National Laboratories like Institute of Science, Bangalore and National Chemical Laboratory, Poona and National Test House, Alipore, for a short period of training lasting for a period of 6 weeks.

Madras Custom House Laboratory is suggested as a Training Centre because -

a) there is ample space;

b) after the formation of the Hyderabad laboratory the Deputy Director will have some free time to devote for training; and

c) easy access is there to different types of work of Excise, Customs, Refinery etc.

18.11.3 At the last stage a brief spell of 4 weeks in either Ghazipur or Neemuch for training in Opium and alkaloid laboratories would suffice. These spells of training should be completed within 9 months and thereafter the officers will be posted for normal work.

18.11.4 A small departmental examination for the direct recruits should be held at the end of the 1st year. Thereafter once in 5 years, both officers in the junior time scale and senior time scale should be sent for a refresher course in one of the National Laboratories according to the subjects in which they have shown special interest. In addition, the Director and Scientific Adviser in Delhi should arrange for seminars on subjects in which they are directly interested as well as in general features of recent advances in science and technology. The seminar may be held at any convenient centre.

18.11.5 Officers with aptitude for research work in analytical chemistry primarily, and in other fields, should be encouraged to write papers which may be read in the seminars, and papers of quality may be allowed to be published in scientific journals with the approval of the Director.

SECTION - III

AUXILIARY STAFF FOR LABORATORIES.

18.12 Every laboratory has a few attenders and the total number is stated to be 148. Historically this cadre must have grown out of the old class IV staff. Amongst all the present laboratory attenders, about 50 per cent are not matriculates and some of them perhaps entered service as class IV. During the last few years matriculates are being recruited. There are however 35 vacancies stated to be unfilled, and we have made proposals elsewhere for recruiting a better class of technical assistants who will be science graduates. The older men, non-matriculate will be retiring during the next few years, and will be replaced by matriculates. In any case laboratory attenders cannot be completely dispensed with as they do some amount of work in the laboratory which is necessary for chemists to perform their duties. This may be compared to the type of semi-skilled work performed by helpers in National Laboratories and Scientific Institutions.

18.13 The main demands of the attenders are:-

1. Their designation should be changed as Laboratory Assistants;
2. They should be given better scale of pay as that of Lower Division Clerks and promotion of Upper Division Clerks.
3. They should be given protective equipments and gloves if they have to handle dangerous substances. This may be considered straightaway.

18.14 In view of what we have described regarding their duties it may not be possible to change the designation immediately. In other laboratories, Laboratory Assistants do exist but they have technical qualifications. A Laboratory Assistant is generally classified as a scientific worker. The present laboratory attenders are not technically qualified. Their demand for better scales of pay and promotion however, deserves some consideration.

Their present scale of pay is somewhat midway between Class IV and Lower Division Clerk. Regarding the normal objection against the Lower Division Clerks' scale of pay for non-matriculates, it is necessary to point out that non-matriculates are the older men who have acquired some specialised experience and have been in this cadre for many years, and they will reach retiring stage in a few years. Their substitutes will be matriculates with a science subject. The Government has already sanctioned a selection grade for attenders to cover 20 per cent of their number. This is a partial recognition of their claim for better prospects. We recommend a scale of Rs. 260-6-326-8-350 for all attenders.

18.15 Notwithstanding what we have said above, we have a feeling that in view of the prevailing trend all over India for similar Government servants to agitate for higher scales, the attenders' demand for scale of pay equivalent to Lower Division Clerks cannot long be resisted. The non-matriculates will waste out soon. Matriculate with a science subject will be the order, and their work is of a semi-skilled nature and they have to work with highly qualified Scientists. It will not merely be an act of grace but one of justice to give them the Lower Division Clerks scale without letting agitation to mount. In that case it will be necessary to designate them as Laboratory Assistants.

18.16 Laboratory Clerks are closely linked to the category of attenders. In fact these so-called clerks do not perform normal clerical or ministerial functions at all. Ministerial work in the laboratory is attended to by clerical staff drawn from the respective Collectorates. Apparently the designation was to distinguish them from attenders and to indicate that this was the promotion stage for them though they do the same work as attenders. Their present scale is Rs.260-8-340-10-430 with 2 Efficiency Bars. We suggest the Efficiency Bar should be abolished. This cale is better than the Lower Division Clerk scale. In view of the background already explained, the Association's demand for Upper Division

Clerk scale for laboratory clerks cannot be entertained. The Upper Division Clerks perform in any regular office work of noting on files etc. Generally Upper Division Clerks are graduates in many offices. The Laboratory Clerks, even the matriculates will not be called upon to do drafting or noting work. There is nothing to prevent the matriculates from sitting for the qualifying tests for clerical appointments in the Collectorates. In Central Revenues Control Laboratory we are suggesting that the ministerial staff be joined with Central Excise Collectorate.

18.17 LIBRARIAN.

Every laboratory has a library with a large number of scientific books, reports, periodicals. The replacement value of these may vary from 5 lakhs to 10 lakhs. All the laboratories subscribe for scientific journals and these have to be kept for reference and old numbers have to be bound and filed properly. The present practice of asking some clerk or attender to look after the library is extremely unsatisfactory. For the Bombay Central Excise Laboratory, a post of Librarin has been sanctioned in Upper Division Clerk's scale. The librarian for bigger libraries should be a graduate with a diploma in library science. It is not necessary that the librarian should be a graduate for smaller libraries but a non-graduate with diploma in science should be adequate. The Pay Commission has prescribed scales of pay for different grades of librarians. We recommend that the Regional laboratories should have a graduate librarian for and the others non-graduate. A diploma or certificate in library science is essential.

18.18 STOREKEEPERS.

Every laboratory has stores. The value of stores might range from Rupees 1 lakh to 3 lakhs. There has been no consistent practice regarding appointment of store keepers. The New Bombay Central Excise Laboratory has appointed a science graduate asStore Keeper on Upper Division Clerk scale of pay. It would be advisable to send the store keepers to some major stores as National Laboratory or technical institutions, to study the method of keeping, accounting and maintenance of stores registers etc. The store keeper should be able to locate items easily to estimate the requirements and intimate to the concerned chemist the shortages and urgent needs. As he should be able to understand the names and significance of stores of different kinds, a knowledge of chemistry is essential and hence, our suggestion that a Chemistry graduate should be appointed as store keeper.

SECTION - IV.

DEPUTATION PROSPECTS FOR CENTRAL REVENUES SCIENTIFIC/TECHNICAL SERVICE OFFICERS.

18.19 The Central Revenues Scientific/Technical Service has still now had a completely isolated existence. Very few officers have been sent on deputation either to the executive branches of the Revenue department or to other Directorates or to outside departments. These officers have the experience and training and knowledge which would justify such opportunities being extended to them.

18.20 There are two ways of providing this opportunity, either sending an officer on deputation to a particular Collectorate for a period of two or three years or adding to the strength of the regional laboratories so that the Head of the regional laboratory can send an officer of sufficient experience to the Collectorates for advice whenever there is a requisition. The balance of advantage it appears to us is in favour of placing the additional officer with the regional laboratory instead of placing him entirely at the disposal of the Collector for a period of years. We have indicated the number of posts that will be necessary for this work. This advisory service will be an additional advantage for the service as a whole, and give all officers an opportunity to acquire different types of experience.

18.21 In addition to this work in the Collectorates the various Directorates under the Board would be benefitted by having a senior technical officer on deputation for a period of two or three years. The following Directorates can provide deputation opportunities.

1. The Directorate of Training;
2. The Directorate of Drawback;
3. The Directorate of Tax Research;
4. The Directorate of Inspection;
5. The Directorate of Statistics and Intelligence, Customs and Central Excise.
6. The Directorate of Anti Evasion; and
7. The Directorate of Audit.

We have already suggested that laboratory officers on recruitment should also undergo a period of training in the Directorate of Training.

18.22 In addition to these intra-departmental deputations the advice of a competent senior laboratory officer with an intimate knowledge of the Customs and Excise Tariffs would be helpful in other departments of the Government of India, as for example, Ministries of Commerce and Industry (viz. Director General of Technical Development), Central Public Undertakings like State Trading Corporation, Scientific Industrial complexes, Indian Oil Corporation, Indian Petro-Chemicals Corporation Limited etc. When attempts are being made to develop an ambitious and competent scientific service, it should be the duty of the Government to open-up more opportunities for these laboratory officers both in the interest of the parent department as well as in the interest of the other departments to which they may go on deputation.

SECTION - V

STAFFING OF THE CENTRAL REVENUES LABORATORIES.

18.23 The statement showing the proposed staff for all Central Revenues Laboratories is given in tabular form at the end of this chapter. We have also explained in earlier chapters, how the Regional Laboratory and the Headquarters laboratories are to be reorganised. Based on these new proposals we estimate the strength of the various posts in the following paragraph:-

Higher Cadre Posts

Director & Scientific Advisor
Rs.2500-2750. - 1 post.
Joint Director.
Rs.2000-2500. - 3 posts.
Deputy Director Grade I
Rs.1800-2000. - 8 posts.
Deputy Director Grade II
Rs.1500-1800. - 7 posts.

18.24 The strength of the Assistant Director in the scale of Rs.1100-1600 has been worked out on the basis of the number of Divisions in each laboratory as well as the number of Assistant Directors required in the Central Excise Laboratories for Collectorates' work, for example Inspection of factories, advising the Collectors on classification matters, checking of returns etc. We reckon the need for 69 posts of Assistant Directors on this scale, of which 18 posts are for Collectorates' technical advisory work.

18.25 The working strength of scientific officers and analysts, who will be actually analysing the samples has been worked out on the basis of the yardstick of 552 samples or 560 in round figures. We have applied a separate yardstick for opium and alkaloid factories. Applying these 2 yardsticks we reckon the necessity for 293 working scientists, of which about 40 per cent of the number being scientific officers class-I junior, and the rest analysts on the lower scale of pay of Rs.550-900. The number actually suggested in the table is 131 Class-I officers (i.e. scientific officer) and 162 analysts. The reason for this allocation is on the assumption that about 50 per cent of the work is simple, and the rest 50 per cent includes both the moderately difficult as well as very difficult samples. While the former can be given to the analysts, the latter will be done by scientific officers. The cadre strength of the Central Revenues Technical Service Class-I excluding leave and deputation reasons will consist of the following posts.

Scientific Officer, Junior Class-I.	-	131
Assistant Director, Senior Class-I.	-	69
Deputy Director, Grade-I and II.	-	15
Joint Director.	-	3
Director.	-	1

This service will have a supporting service of analysts - 162 in number and technical assistants - 30 in number. It is necessary to add 10 per cent as leave and deputation reserve and the total service strength will be not less than 500.

18.25.1 The number we have given of scientific officers and analysts is only an approximate indication based on rough estimation of the workload and its categorisation. As already explained this study may have to be done in a systematic manner, before the actual number is finally determined. It must also be borne in mind that these laboratory services are of an expanding nature and at least what we need upto a period of 10 years must guide any calculations.

Based on the recommendations mentioned above, the cost of technical services would work out to Rs.65.8 lakhs per annum taking average cost against the present expenditure of Rs.35.8 lakhs. This includes only the scientific staff and not the auxiliary staff. An expenditure of this size should not be regarded as extravagant in view of the importance of the work involved; and the additional efficiency this will bring about in the collection of Customs and Excise Revenue which may very likely to exceed Rs. 10,000 crores in the not too distant future.

18.26 We have already observed that a service of this number and importance should be declared an established service like the other recognised Class-I Central Services. The Technical Assistants' posts are suggested for the major Regional Laboratories and for Refinery Laboratories. These Assistants will help the chemists in the preparation of standard solutions, keeping the apparatus ready for operation as well as carrying out some minor tests, like flashing point, flame height, grammage etc. They will also be given the duty of up-keeping of the laboratory and also maintaining the instruments in clean and working condition. The Technical Assistants have been provided on the basis of one Technical Assistant for each Division. The posts recommended are only 30.

18.27 Laboratory attenders are provided on the basis of 1 laboratory attender to 2 scientific workers and that the laboratory clerks' post will be only a promotion post. The laboratory clerks will be attached to stores, library, gas plant, etc. and also to supervise the work of the laboratory attenders. On this calculation the requirements are 113 attenders and 40 laboratory clerks as against the existing staff of 148 attenders and 18 laboratory clerks.

18.28 The Delhi Laboratory has been given a glass blower as his service will become necessary for Research and Development work. There is a post of instrument maker in Central Revenues Control Laboratory which has been retained, so that he will assist the proposed instrument engineer in his work of repairing and maintaining all sophisticated instruments. He will also be incharge of the electroplating work of hydrometers.

As regards the store-keepers the major Regional Laboratories which have stores valued at Rupees 2 to 3 lakhs will be given a store-keeper each in the senior grade and the other laboratories will be given store-keepers ordinary grade. As regards post of librarian, the Headquarters Laboratory at Central Revenues Control Laboratory where most of reference work will be done, should be given a senior grade librarian and for the other major laboratories, an ordinary grade librarian would suffice.

We have given in the following statement (18.29) the distribution of various levels of officers at the different laboratories. The disposition of the auxiliary staff is also shown in the statement. The Recruitment Rules for these posts have been indicated in 18.30 and 18.31.

We have provided for 18 posts of Assistant Directors Class I senior scale officers for assisting Central Excise Collectorates. The necessity for this has been explained in great detail earlier (Chapter 12).

18.29 STATEMENT SHOWING PROPOSED STAFF FOR CENTRAL REVENUE LABORATORIES.

of the Laboratory	Director and Scientific Adviser 2500-2750	Joint Director 2000-2500	Deputy Director Grade - I 1800-2000	Deputy Director Grade-II 1500-1800	Assistant Director 1100-1600	Scientific Officer 700-1300	Analyst. 550-900	Technical Assistant 425-700	Laboratory Attenders. 260-350	Laboratory Clerk. 260-430	Glass Blower. 380-600	Storekeeper. S.G. 425-600 O.G. 330-550	Librarian S.G. 425-700 O.G. 330-550	Instrument maker 290-400
2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
L., New Delhi	1	2	3	2	14	16	15	6	14	2	1	1(SG)	1(SG)	1
ab Delhi or bad,	-	-	1	-	7	4	5	3	5	2	-	1(OG)	1(OG)	-
ab.Borbay.	-	-	1	-	8	12	12	4	9	4	-	1(OG)	1(OG)	-
Lab.Bombay.	-	1	-	1	7	34	35	6	27	6	-	1(SG)	1(OG)	-
Lab. Calcutta.	-	-	1	-	7	12	13	4	8	6	-	1(SG)	1(OG)	-
La .Madras	-	-	1	-	7	19	19	4	9	6	-	1(SG)	1(OG)	-
ab. Baroda.	-	-	-	1	4	6	7	-	5	2	-	1(OG)	1(OG)	-
Lab. Cochin.	-	-	-	1	2	4	4	-	3	1	-	1(OG)	1(OG)	-
Lab. Kanpur.	-	-	-	1	4	5	5	-	5	2	-	1(OG)	1(OG)	-
Lab. Goa.	-	-	-	-	1	1	1	-	1	1	-	-	-	-
ab.,Gauhati.	-	-	-	-	1	-	1	-	1	1	-	-	-	-
ab.,Hyderabad.	-	-	-	-	1	2	3	-	2	1	-	-	-	-
b.,Kandla.	-	-	-	-	1	1	1	-	1	1	-	-	-	-
ab., Vizag.	-	-	-	-	1	1	2	-	1	1	-	-	-	-

2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	1
H.P.C.L.Lab.Bombay.	-	-	-	-	-	1	1	-	1	-	-	-	-	-
Paradeep Port.	-	-	-	-	1	-	1	-	1	1	-	-	-	-
C.Ex.&A.O.C. Digboi.	-	-	-	-	-	1	-	1	1	-	-	-	-	-
C.Ex. &IOC, Barauni.	-	-	-	-	-	1	-	1	1	-	-	-	-	-
Baldia Refinery.	-	-	-	-	-	1	-	1	1	-	-	-	-	-
G.O.&A.W.,Ghazipur.	-	-	1	1	2	8	26	-	13	3	-	-	-	-
G.O.&A.W.,Neemuch.	-	-	-	-	1	2	11	-	4	-	-	-	-	-
TOTAL:	1	5	8	7	69	131	162	30	113	40	1	9(SG-4) (OG-5)	9(SG1) (OG8)	
eave & Deputation Reserve	-	-	-		-	22	16	3	15	-	-	-	-	-
isting Total:	1	-	[illegible]	[illegible]	13	20+ 60 ClassII	85	64	148	18	-	-	-	1

a) 18 posts of Assistant Directors to form team with Headquarters Superintendent (Technical) fo Collectorate's inspection and advisory work.

b) At Delhi Central Revenues Control Laboratory & Bombay Custom House two posts of Scientific O with instrument Engineer qualification need be recruited.

c) In the Calcutta Laboratory there will be reversion of laboratory attenders. So creation of Assistant may have to deferred or else other alternate arrangement may be thought of.

d) More posts of analysts need be created on ad hoc basis to dispose off the accumulated arrea 400 opium samples in Central Revenues Control Laboratory.

18.30: Rules for Class-I posts in the Central Revenues Scientific/ Technical Services in Ministry of Finance, Department of Revenue.

Name of the post.	No. of posts.	Classification.	Scale of Pay.	Whether selection or non-selection.	Age limit for direct recruits.	Education & other qualifications required for direct recruitment.	Whether age & educational qualification prescribed for direct recruits will apply in the case of promotees.	Period of probation, if any.	Method of recruitment whether by direct recruitment or by deputation/ transfer and percentage of vacancies to be filled by various methods.	In case of recruitment by promotion/deputation/ transfer; grades from which promotion/deputation/transfer to be made.	If a D.P.C. exists, what is its composition.	Circumstances in which UPSC is to be consulted in making recruitment.
2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
irector and cienti- ic Ad- iser.	1	GCS Cl.I Gazetted.	2500-125/2-2750.	Selection.	Not Applicable.	Not applicable.	Not Applicable	*	Normally by promotion.	Promotion from Joint Director with not less than 16 years Class-I service.	Class I DPC.	As required under rules.
oint irector	3	-do-	2000-125/2 2500.	Selection.	-do-	-do-	-do-	*6 months.	-do-	Promotion from Dy. Director Gr. I with not less than 12 years total Cl.I service.	-do-	-do-
eputy irector rade-I	8	-do-	1600-100-2000	-do-	-do-	-do-	-do-	6 months	-do-	Promotion from Dy.Director Grade-II	-do-	-do-
eputy irector .II	7	-do-	1500-100-1800.	-do-	-do-	-do-	-do-	-do-	-do-	Promotion from Asstt.Director with not less than 6 years of total Cl.I service.	-do-	-do-

2.	3.	4.	5.	6.	7	8	9	10.	11.	12.	13.	
is- t ector	60	G.C.S. Cl-I Gazetted.	1100-50-1600	Selection.	Not applicable.	Not applicable.	Not applicable.	6 months ..	Normally by promotion.	Promotion from Scientific Officer with not less than 4 years of total Class-I service.	Class-I D.P.C.	As ur ru
enti- icer.	131	-do-	700-40-900-EB-40-1100-50-1300.	-do-	28 years	M.Sc. with 2 years experience	Yes	2 years	50% posts by promotion & 50% by direct recruitment through competitive examination.	Promotion from Analyst with not less than 4 years service.	-do-	

* It is open to the Government to appoint a non-departmental officer to any one of these posts. In that case the terms will be specified in the order of appointment. If a Departmental Officer is promoted as Director or Joint Director it is open to the Government to appoint one as officiating.

e: The Committee views on these aspects under item 6 to 12 are not conclusive. These need to be finalised in consultation with the Union Public Service Commission. The Service Rules fixed should be flexible enough to prevent adhoc appointments or down-gradation of posts at any time.

18.31: Rules for Class-II (Non-Gazetted) posts in the Central Revenues Scientific/Technical Service in Ministry of Finance, Department of Revenue.

S.No.	Name of the post.	No. of posts.	Scale of pay.	Whether selection or non-selection.	Age limit for direct recruitments.	Educational and other qualifications required for direct recruitments.	Whether age & educational qualification prescribed for direct recruits will apply in the case of promotees.	Period of probation, if any.	Method of recruitment whether direct recruitment or by deputation/transfer & percentage of vacancies to be filled by various methods.	In case of recruitment by promotion/deputation/transfer, grades from which promotion/deputation transfer to be made.	If a D.P.C. exists, what is its composition.	Circumstances in which UPSC is to be consulted in making recruitment.
1.	2.	3.	4.	5.	6.	7.	8.	9.	10	11.	12.	13.
1.	Analyst	162	550-25-750-EB-30-900.	Non-selection post.	25 years	M.Sc. (Chemistry) or chemical technology or equivalent preferably with two years experience in testing or Industry or teaching.	Not applicable.	Six months	75% direct recruitment	Not applicable.	Local recruitment Board.	As required under the rules.
2.	Technical Assistant.	50	425-15-500-EB-15-560-20-700.	-do-	21 years	B.Sc. Chemistry or diploma holder in Chemical Engineering technology or Rubber technology or Electrical Engineering etc.	-do-	-do-	100% direct recruitment	-do-	-do-	-do-

CHAPTER - 19

MEASURES FOR REDUCING DELAYS IN TESTING AND REPORTING

19.1 The Trading Associations are legitimately concerned, with expediting the test reports. Even this Committee was set up primarily to go into this question. In all our investigations we have constantly borne this in mind and our recommendations in the various Chapters are guided by this main consideration. We are summarising below many of these recommendations for ready reference.

19.2 The problem which was most acutely felt in Bombay during the last several years has partly been solved by setting up a separate laboratory for Central Excise at Bombay itself. Further the starting of Custom House Laboratory at Goa has also had a salutary effect. Various prompt measures were taken to clear off back log of accumulations.

19.3 Setting up of new laboratories in recent years in Baroda and Kandla have also eased the situation in Western India which is our most important industrial area.

19.4 We are recommending setting up, immediately, laboratories at Kanpur, Hyderabad, Gauhati and thereafter at six other growing industrial areas.

19.5 The various procedures for drawal of samples and their despatch to the laboratory are being improved to ensure greater speed.

19.6 The Committee has recommended reorganisation of all the laboratories on divisional basis i.e. commodity-wise with more officers and supervisory officers.

19.7 The removal of various types of grievances of the officers leading to frustration will lead to greater efficiency.

19.8 The creation of Class-I service; better scale of pay and prospects, well channelled promotion will generate greater enthusiasm for work.

19.9 Special procedure has been suggested for difficult samplings like ores and textile etc.

19.10 One hurdle in the way of speeding up test in complicated cases is inadequacy of our present laboratory equipment. This is being remedied by equipping the laboratories more adequately.

19.11 By recruiting scientists with special qualifications, difficulty in testing some samples by methods other than pure chemical analysis will be overcome.

19.12 Provisionsis also being made for making better use of nearest National Laboratories and by entrusting our own Chemists to do the tests in some cases in private laboratories.

19.13 By insisting on a manufacturer/importer to produce technical literature on goods at the stage of filing of clearance papers either at Customs or Central Excise officers i.e. more essential information is made available to facilitate speedier analysis.

19.14 We have also suggested simplifying the wordings of several tariff items in order to facilitate greater precisions in describing the "goods".

19.15 Priority should be given to provisional assessment cases in Central Excise, as is given to live Bills of entry in the Custom Houses.

10.16 Simpler and adhoc drawback rates are suggested for composite goods exported under drawback claim in some circumstances.

10.17 Preparation of Test Procedure Manual has been recommended. This will enable to supply to the trade, details about the methods of test adopted in the laboratories as and when necessary.

10.18 Retesting facilities are being made available at regional laboratories for the Central Excise samples thus saving the need for appeals and retesting at the Control laboratory, Delhi.

Normally at present retest is done on the remnants or duplicate samples, on appeal, in the Control Laboratory. In view of the very large number of Central Excise licensees manufacturing goods distributed in small towns all over the country, the Customs analogy cannot be followed here. We are suggesting therefore that retest facilities should be made available at the nearest major laboratories, as for example samples originally tested at the Cochin laboratory or the proposed Hyderabad laboratory should be retested on a challenge by the party, at Madras even before the adjudication, if a retest is requested by the party for sufficient reasons. Similarly retesting facilities should be allowed from the Baroda and Ahmedabad Collectorates in the Bombay Central Excise Laboratory. The Calcutta Laboratory will do retest of samples tested in the proposed Gauhati and Paradeep laboratories. Samples tested in smaller laboratories would go to the nearest major laboratories, for example from Kanpur to Delhi and from Vizagapatanam to Madras.

CHAPTER - 20

MODEL LABORATORY FOR MULTIPURPOSE WORK - REGIONAL RESEARCH LABORATORY, HYDERABAD.

20.1 The Committee during its tour was looking for a multipurpose Laboratory which could serve as a model for reorganising the Central Revenues Laboratories. Only at a late stage, it came to our notice that the Regional Research Laboratory, Hyderabad under the Council of Scientific and Industrial Research is one such laboratory. The whole Committee could not make a visit, yet the Chairman of the Committee could on his way to Delhi, visit this Laboratory at Hyderabad. His note is quoted in full:-

> "I met the Director and Scientists, who gave me a detailed account of the set up and activities of this institution. This is perhaps the only multipurpose Research institution amongst all the national laboratories and is, therefore, more suitable for a comparative study for our purpose. The Director is on a pay scale of Rs.3000-3500; he is assisted by a Committee of management and an advisory sub-committee. The general design of distribution of activities is given in the attached chart. Except for the Administrative services, other divisions and sub-divisions are very flexible. As the main jobs are project based inter-disciplinary, scrutiny is called for. The leader of a project team may be from one division and its complement of Scientists may be drawn from other divisions and sub-divisions. In addition to the Director there are two scientists drawing Director's level of pay, though they are not described as such. They are selected by the review system for preferment. The practice followed in National Laboratories allows for this kind of preferment to avoid stagnation.
>
> There are six Officers of Deputy Director's status (Scientist 'F') on pay scale of Rs.2000-2500. The allocation of work may not be division-wise, but according to the Officer's calibre and specialisation, and depending on the

importance of the work handled. Their selection for the grade and work is based not on seniority, but according to periodic assessment, which is the case with all major National Laboratories for selection. It is possible, some scientists jump a grade sometimes.

Below are Scientists (E1 and E2) -- on Rs.1500-2000 and a few are on Rs.1500-2250. These posts can be described as of Asstt. Director's category. There are 28 such posts (E1 and E2 together). Their work is also flexible and does not fit in, according to the Divisions in the chart.

20.2 The note explains how the periodic review system of the performance of the scientists can be dovitailed into the somewhat heirarchic system we are contemplating; and also how promotions to higher pay scales are made even though there may not be adequate number of sanctioned posts in the higher grades. The pay scale of the Head of the Regional Laboratory is far better than what we have recommended for the Director; and there are officers on that scale without carrying the designation of Director or Special Director. It is also interesting to observe that scientists recruited at the lowest level find a satisfactory career within the institution itself. Though there are Divisions and Sub-divisions, postings of officers is kept fluid. There are some useful models for our laboratories to emulate.

20.3 We realise the number of higher posts and the pay scales, we have proposed, does not compare favourably with the liberal provisions for such posts in the Hyderabad laboratory. We have restricted the number, consistent with our requirements, but a larger provision at a future date should be possible and should not be regarded as excessive for a Scientific - Technical Service.

Below, there are Scientists C (Rs.1100-1600). In this category there may be a few of technical grade - B.Scs. promoted from lower ranks for their experience and special skills. There are 60 Officers in this group.

The last group of Scientists 'B' and B1 on Rs.700-1300 do the basic work and are distributed to the various sub-divisions, projects etc. There are now 80 such Officers - direct recruits plus promoted technical grades.

In the 'A' and 'A1' category on Rs.650-1200, there are 25 officers. This category is not favoured and is expected to be abolished soon. There are more than a hundred technical grades below.

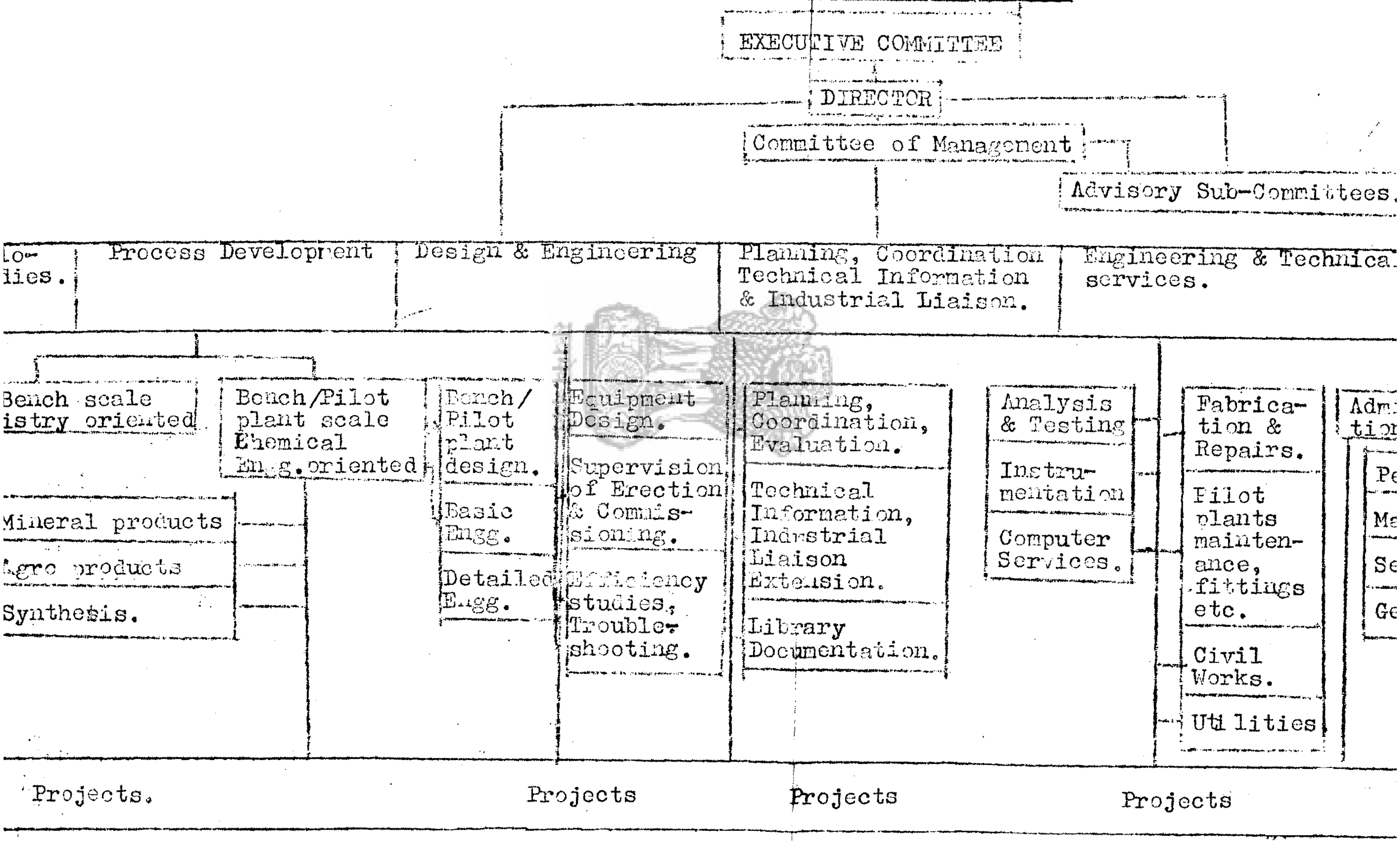
It is ascertained that Recruitment is on an All India basis and though theoritically transferable to other National Laboratories, most officers find their career within this institution itself. Some junior level Officers work for a Ph.D and study leave is granted for those who want to join any institution to prepare for a doctorate. Among the initial recruits one in three of perhaps less is a Ph.D. As this is an industrial Research oriented institution, M.Techs. are also taken. An M.Tech. is rated almost on a par with Ph.D. The promotion prospects within the institution are considered good, as there are 28 posts of Assistant Director's level, 6 of Deputy and 2 or 3 of Director's level.

The organisation chart of this laboratory is appended below.

CHAPTER 20 (CHART)

REGIONAL RESEARCH LABORATORY, HYDERABAD.

ORGANISATION CHART.



CHAPTER - 2.0

LABORATORY SERVICES

CHAPTER - 5.0

TESTS CONDUCTED BY OUTSIDE LABORATORIES.

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SUMMARY

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CHAPTER - 16.0

OPIUM AND ALKALOID WORKS :

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STAFF MORALE - SUGGESTIONS FOR IMPROVEMENT.

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STAFF STRUCTURE, PAY SCALES, RECRUITMENT, TRAINING, PROMOTIONS ETC.

CHAPTER - 19.0

MEASURES FOR REDUCING DELAYS IN TESTING AND REPORTING

CHAPTER - 20.0

MODEL LABORATORY FOR MULTIPURPOSE WORK - REGIONAL RESEARCH LABORATORY, HYDERABAD.

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PROCEDURE FOR DRAWAL OF SAMPLES THEIR TESTING, REPORTING ETC., FREQUENCIES FOR DRAWAL OF SAMPLES.

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CHAPTER - 7.0

RATIONALISATION OF THE CUSTOMS AND EXCISE TARIFFS.

CHAPTER - 8.0

THE ROLE OF TESTING IN THE SETTLEMENT OF DRAWBACK CLAIMS.

CHAPTER - 9.0

DEPARTMENTAL LABORATORIES IN REFINERIES